

# Amateur Radio

45241

<http://www.cq-amateur-radio.com>

## COMMUNICATIONS & TECHNOLOGY

## DECEMBER 2006

# CQ

Major HF  
Phone Band  
Expansion,  
Page 2

- **Results: 2006 CQ WW  
160 Meter Contest, p. 13**
- **CQ Reviews: Array  
Solutions PowerMaster  
VSWR/RF Power Meter, p. 20**

\*\*\*\*\*SCH 3-DIGIT 230  
01 000658060 9912 2612  
JACK SPEER  
BUCKMASTER PUB  
6196 JEFFERSON HWY  
MINERAL VA 23117-3425



**On the Cover: Bruce Bureau,  
WB8NJP, at the U.P. 200  
dogsled race in Marquette,  
Michigan. Details on  
page 114.**

# KENWOOD

Listen to the Future



## KENWOOD

Listen to the Future



**Happy Holidays to you...**

We celebrate this Holiday Season with additional savings off the TH-F6A, TH-K2AT, TM-271A and all HF radios. These savings are in addition to any existing coupons.

**See your local dealer for details.**

### KENWOOD U.S.A. CORPORATION

Communications Sector Headquarters

3975 Johns Creek Court, Suite 300, Suwanee, GA 30024-1265

Customer Support/Distribution

P.O. Box 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745

Customer Support: (310) 639-4200 Fax: (310) 537-8235

*Savings good from Nov. 15, 2006 - Jan 31, 2007.*

**INTERNET**

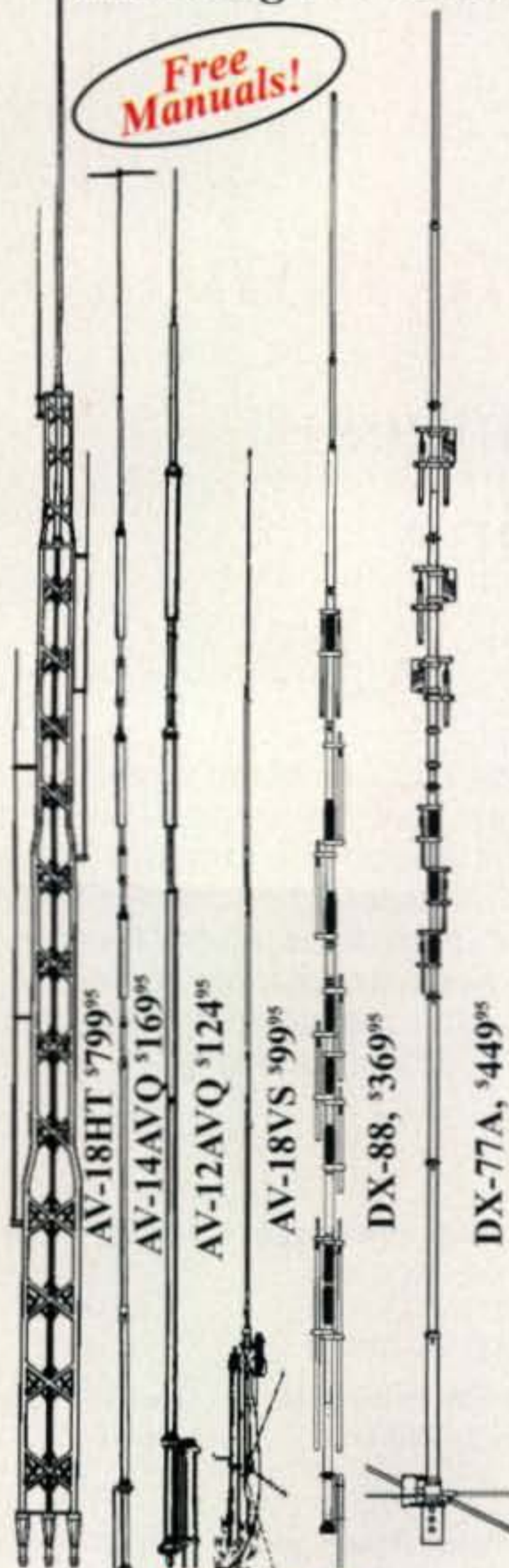
Kenwood News & Products  
<http://www.kenwoodusa.com>

ADS#38906



# hy-gain® HF VERTICALS

Self-supporting -- no guys required... Remarkable DX performance -- low angle radiation, omnidirectional... Handles 1500 Watts... Low SWR... Automatic band switching... Aircraft quality aluminum tubing... Stainless steel hardware... Recessed SO-239 connector... Two year limited Warranty...



Free Manuals!

## hy-gain® Classics

All hy-gain multi-band vertical antennas are entirely self supporting -- no guys required.

They offer remarkable DX performance with their extremely low angle of radiation and omnidirectional pattern.

All handle 1500 Watts PEP SSB, have low SWR, automatic band-switching (except AV-18VS) and include a 12-inch heavy duty mast support bracket (except AV-18HT).

Heavy duty, slotted, tapered swaged, aircraft quality aluminum tubing with full circumference

compression clamps is used for radiators. Includes all stainless steel hardware. Recessed SO-239 prevents moisture damage. Hy-gain verticals go up easily with just hand tools and their cost is surprisingly low. Two year limited warranty.

**AV-18HT, \$849.95. (10,12,15,20,40,80 M, 160, 17 Meters optional). 53 ft., 114 lbs.**

Standing 53 feet tall, the famous Hy-Gain HyTower is the world's best performing vertical! The AV-18HT features automatic band selection achieved through a unique stub-decoupling system which effectively isolates various sections of the antenna so that an electrical 1/4 wavelength (or odd multiple of a 1/4 wavelength) exists on all bands. Approximately 250 kHz bandwidth at 2:1 VSWR on 80 Meters. The addition of a base loading coil (LC-160Q, \$109.95), provides exceptional 160 Meter performance. **MK-17, \$89.95.** Add-on 17 Meter kit. 24 foot tower is all rugged, hot-dip galvanized steel and all hardware is iridized for corrosion resistance. Special tilt-over hinged base for easy raising & lowering.

**AV-14AVQ, \$169.95. (10,15,20,40 Meters). 18 ft., 9 lbs.** The Hy-Gain AV-14AVQ uses the same trap design as the famous Hy-Gain Thunderbird beams. Three separate air dielectric Hy-Q traps with oversize coils give superb stability and 1/4 wave resonance on all bands. Roof mount with Hy-Gain AV-14RMQ kit, \$89.95.

**AV-12AVQ, \$124.95. (10, 15, 20 Meters). 13 ft., 9 lbs.** AV-12AVQ also uses Thunderbird beam design air dielectric traps for extremely Hy-Q performance. This is the way to go for inexpensive tri-band performance in limited space. Roof mount with AV-14RMQ kit, \$89.95.

**AV-18VS, \$99.95. (10,12,15,17,20,30,40,80 Meters). 18 ft., 4 lbs.** High quality construction and low cost make the AV-18VS an exceptional value. Easily tuned to any band by adjusting feed point at the base loading coil. Roof mount with Hy-Gain AV-14RMQ kit, \$89.95.

**DX-88, \$369.95. (10, 12, 15,17,20,30,40,80 Meters, 160 Meters optional). 25 ft., 18 lbs.**

All bands are easily tuned with the DX-88's exclusive adjustable capacitors. 80 and 40 Meters can even be tuned from the ground without having to lower the antenna. Super heavy-duty construction. DX-88 OPTIONS: 160 Meter add-on kit, KIT-160-88, \$189.95. Ground Radial System, GRK-88, \$99.95. Roof Radial System, RRK-88, \$99.95.

**DX-77A, \$449.95. (10, 12, 15, 17, 20, 30, 40 Meters). 29 ft., 25 lbs.**

No ground radials required! Off-center-fed Windom has 55% greater bandwidth than competitive verticals. Heavy-duty tiltable base. Each band independently tunable.

Model #	Price	Bands	Max Power	Height	Weight	Wind Surv.	Rec. Mast
AV-18HT	\$849.95	10,15,20,40,80	1500 W PEP	53 feet	114 pounds	75 MPH	-----
AV-14AVQ	\$169.95	10,15,20,40	1500 W PEP	18 feet	9 pounds	80 MPH	1.5-1.625"
AV-12AVQ	\$134.95	10/15/20 M	1500 W PEP	13 feet	9 pounds	80 MPH	1.5-1.625"
AV-18VS	\$99.95	10 - 80 M	1500 W PEP	18 feet	4 pounds	80 MPH	1.5-1.625"
DX-88	\$369.95	10 - 40 M	1500 W PEP	25 feet	18 pounds	75 mph no guy	1.5-1.625"
DX-77A	\$449.95	10 - 80 M	1500 W PEP	29 feet	25 pounds	60 mph no guy	1.5-1.625"

## hy-gain® PATRIOT

Hy-Gain's new PATRIOT HF verticals are the best built, best performing and best priced multiband verticals available today. For exciting DX make full use of your sunspot cycle with the PATRIOT's low 17 degree angle signal.

**No ground or radials needed**  
Effective counterpoise replaces radials and ground.

**Automatic bandswitching**  
Single coax cable feed. Each band is individually tunable. Extra wide VSWR bandwidth. End fed with broadband matching unit.

**Sleek and low-profile**  
Low 2.5 sq. ft. wind surface area. Small area required for mounting. Mounts easily on decks, roofs and patios.

**Full legal limit**  
Handles 1500 Watts key down continuous for two minutes.

**Built-to-last**  
High wind survival of 80 mph. Broadband matching unit made from all Teflon® insulated wire. Aircraft quality aluminum tubing, stainless steel hardware.

**hy-gain® warranty**  
Two year limited warranty. All replacement parts in stock.

**AV-640, \$399.95. (6,10,12, 15,17,20,30,40 Meters). 25.5 ft., 17.5 lbs.** The AV-640 uses quarter wave stubs on 6, 10, 12 and 17 meters and efficient end loading coil and capacity hats on 15, 20, 30 and 40 meters -- no traps. Resonators are placed in parallel not in series. End loading of the lower HF bands allows efficient operation with a manageable antenna height.

**AV-620, \$299.95. (6,10,12,15,17,20 Meters). 22.5 ft., 10.5 lbs.** The AV-620 covers all bands 6 through 20

Meters with no traps, no coils, no radials yielding an uncompromised signal across all bands.

**Free Hy-Gain Catalog and Nearest Dealer... 800-973-6572**  
Call your dealer for your best price!

# hy-gain®

**Antennas, Rotators & Towers**  
308 Industrial Park Road, Starkville, MS 39759 USA  
Toll-free Customer Sales Hotline: 800-973-6572  
• TECH: 662-323-9538 • FAX: 662-323-6551  
<http://www.hy-gain.com>

Prices and specifications subject to change without notice or obligation. © Hy-Gain®, 2004.

**BREAKING NEWS:**



# Major Expansion of HF Phone Bands

## Highlights of Various Rule Changes in FCC "Omnibus" Rulemaking

BY CQ STAFF

The FCC has finally released its decisions in WT Docket 04-140, a wide-ranging Report & Order (R&O) that addresses 12 petitions for rulemaking—some filed more than five years ago! Normally, final action on a proceeding takes place about a year after a Notice of Proposed Rulemaking (NPRM). This R&O, designated FCC 06-149, took nearly 2½ years from the time the NPRM was released in the spring of 2004 to the release of the FCC decision on October 11, 2006. Generally, the FCC acted as it had proposed in 2004.

Here is a synopsis of the new rules:

1. The FCC has basically adopted the ARRL's "Novice reformatting" plan. New Part 97.301 and 97.305 rules allow amateur radio operators more spectrum in four currently authorized amateur HF bands to be used primarily for voice communications. Overall, Amateur Extra Class operators gain an additional 175 kHz of HF voice spectrum, General Class operators gain 125 kHz, and Advanced Class operators gain 100 kHz. The biggest winners, though, may be Novices and Technicians who have passed their code tests and who enjoy operating HF CW. These hams now have access to the full General Class CW segments on 80, 40, 15, and 10 meters, a net gain of 250 kHz in CW operating spectrum. (There are no changes to voice privileges for Novices and Techs with code.) *Note that the old "Novice bands" will cease to exist.* The accompanying table provides the specifics.

2. Auxiliary stations currently are restricted to transmitting only on the

1.25 meter (222.15–225.00 MHz) and shorter wavelength ham bands. In response to a request from Kenwood Communications, this is being lowered to include most of the 2-meter band. The new amended Part 97.201(b) rule makes Kenwood's Sky Command system legal for operation within the

U.S. The Sky Command system permits the user to operate certain Kenwood equipment remotely via a common 2-meter/70-centimeter VHF/UHF handheld transceiver. The new rule will permit any manufacturer, however, to offer remote-control features using a 2m/70cm handheld.

### Changes in HF Operating Privileges by Band and License Class

75–80 Meters			
License Class	Current Voice Privileges	New Voice Privileges	Net Change
Extra Class	3750–4000 kHz	3600–4000 kHz	+150 kHz
Advanced Class	3775–4000 kHz	3700–4000 kHz	+75 kHz
General Class	3850–4000 kHz	3800–4000 kHz	+50 kHz
License Class	Current CW Privileges	New CW Privileges	Net Change
Novice*	3675–3725 kHz	3525–3600 kHz	+25 kHz
40 Meters			
License Class	Current Voice Privileges	New Voice Privileges	Net Change
Extra Class	7150–7300 kHz	7125–7300 kHz	+25 kHz
Advanced Class	7150–7300 kHz	7125–7300 kHz	+25 kHz
General Class	7225–7300 kHz	7175–7300 kHz	+50 kHz
License Class	Current CW Privileges	New CW Privileges	Net Change
Novice*	7100–7150 kHz	7025–7125 kHz	+50 kHz
15 Meters			
License Class	Current Voice Privileges	New Voice Privileges	Net Change
Extra Class	21200–21450 kHz	Same	No change
Advanced Class	21225–21450 kHz	Same	No change
General Class	21300–21450 kHz	21275–21450 kHz	+25 kHz
License Class	Current CW Privileges	New CW Privileges	Net Change
Novice*	21100–21200 kHz	21025–21200 kHz	+75 kHz
10 Meters			
License Class	Current Voice Privileges	New Voice Privileges	Net Change
Extra/Adv/Gen	28300–29700 kHz	Same	No change
Novice*	28300–28500 kHz	Same	No change
License Class	Current CW Privileges	New CW Privileges	Net Change
Novice*	28100–28500 kHz	28000–28500 kHz	+100 kHz

(\*includes Technician Class operators who have passed a Morse code exam)

3. Currently, spread-spectrum (SS) emission may only be transmitted above the 420-MHz (70-cm) band. New Part 97.301(c) lowers this to include the the 222-225-MHz (1.25-cm) band.

4. The rules currently allow the retransmission of space shuttle communications. Part 97.113(e) is being amended to include all "manned spacecraft," including the International Space Station, subject to the current restrictions, including permission from NASA, and so forth.

5. Current rules do not permit a living radio amateur to specify an amateur radio club to receive his/her callsign upon death. A new Part 97 rule will permit a licensee to express a preference as to which club may receive his/her callsign.

6. Currently, amateurs may file multiple requests for the same vanity callsign on the same day, giving them an unfair advantage in obtaining that callsign, since it is awarded by lottery. The new Part 97.19(d)1 rule will prohibit an applicant from filing more than one application per day for a specific vanity callsign.

7. Currently, the rules prohibit commercial manufacturers from marketing RF power amplifiers that are capable of transmitting on the 12- and 10-meter amateur bands as a way to prevent use of these amplifiers by Citizens Band (CB) radio operators. New Part 97.317(a)3 will now permit the manufacture and sale of amps that operate on 12 and 10 meters as long as they exhibit no amplification between 26 MHz and 28 MHz and may not be easily modified to do so. They will still have to meet FCC certification standards.

8. Currently, Part 97.401(d) authorizes an amateur station in Alaska to transmit communications during emergencies on 5.1675 MHz (the Alaska Emergency Frequency), but not communications for training drills and tests. This rule is being changed to authorize amateur stations in or near Alaska to transmit communications during tests and drills on 5.1675 MHz.

9. New Part 97.509(a) deletes the requirement that a VE team publicize the location and time of an upcoming VE license examination session. New Section 97.509(m) deletes the requirement that the test session paperwork be submitted to their VEC within 10 days. The FCC said these restrictions were no longer necessary.

10. New Part 97.407(b) deletes the specific frequency bands and segments on which Radio Amateur Civil Emergency Service (RACES) stations may operate, and clarifies that during certain emergencies the frequency segments

available to RACES stations and amateur stations participating in RACES would be authorized pursuant to Part 214 of the Code of Federal Regulations, "Procedures for Use and Coordination of the Radio Spectrum During a War-time Emergency."

11. Part 97.505(a), Examination Credit, is being amended to provide Element 1 (5-wpm Morse) credit to any applicant who has passed a code examination in the past even though his or her license may now be expired.

WT Docket 04-140 does *not* address

Morse code testing in the Amateur Service. That matter will be covered in the next major Amateur Service rule-making—WT Docket 05-235.

The new rules outlined here go into effect 30 days after publication in the *Federal Register*, estimated to be about mid-November. That would make the rules effective in mid-December. "Washington Readout" editor Fred Maia, W5YI, will examine the FCC's "Omnibus" rulemaking in detail in his January 2007 column.

## New from West Mountain Radio

### RIGblaster plug & play

The fastest and easiest to hookup RIGblaster ever, with the minimum time to the first QSO! Built in USB interface provides rig control, CW keying plus Echolink operation. Unlike other RIGblasters the plug & play works only with a radio's data or aux jacks, not a mic jack and may be ordered for your particular radio. The plug & play is the only USB sound card interface that has fully isolated audio and keying circuits for a clean, hum free signal.

Operation on all modes and bands with mic. muting is only possible if your radio's back panel jack supports this.



### CBA Amplifier 10X

The CBA is the easy and inexpensive way to accurately measure the health of any size or type of battery.

A CBA can test any battery at up to a 100 watt continuous discharge rate but with the new CBA Amplifier accessory connected to a CBA you can test at 500 watts continuously!

Intended for lab or commercial use in emergency communications, aerospace and medical applications the CBA amplifier is the solution.



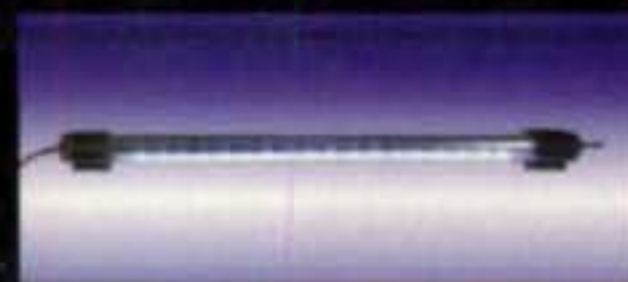
### RIGrunner 8012

80 amp total continuous operation, 40 amps on each side's 6 outputs to run a total of 12 pieces of equipment. Supplied with a permanently attached six foot 8 gauge power cord. Blown fuse indicators and unambiguous over and undervoltage audible and visual alarms.



### PWRbrite LED1

Super efficient blue white LED tube light for your ham station, especially QRP. Dynamically regulated steady light even with CW operation. Full brightness from 11 to 24 volts with almost indefinite life.



### RIGtalk RT1

For the first time you can control your radio with a computer's USB port. The USB RIGtalk CAT/CI-V rig control interface allows your radio to share frequency mode and band information with your logging software without tying up a serial port.



[www.westmountainradio.com](http://www.westmountainradio.com)

**West Mountain Radio**

18 Sheehan Ave., Norwalk, CT 06854 Dealer inquiries invited

Order Toll Free  
888 WESTMTN  
888 937-8686

# CQ contents

DECEMBER 2006

AMATEUR RADIO  
EMERGENCY SERVICE



p. 28



p. 13

## features

Vol. 62 No. 12

- 2 MAJOR EXPANSION OF THE HF PHONE BANDS:** Highlights of various rule changes in FCC "Omnibus" Rulemaking *By CQ Staff*
- 13 RESULTS OF THE 2006 CQ WW DX 160 METER CONTESTS**  
*By David L. Thompson, K4JRB*
- 20 CQ REVIEWS: Array Solutions PowerMaster VSWR/RF Power Meter**  
*By Phil Salas, AD5X*
- 26 MATH'S NOTES:** Reflections *By Irwin Math, WA2NDM*
- 46 QRP:** Holiday fun QRP style *By Dave Ingram, K4TWJ*
- 52 DIGITAL CONNECTION:** Wireless Local Area Network (LAN) design  
*By Don Rotolo, N2IRZ*
- 62 WORLD OF IDEAS:** Goodies for the holidays *By Dave Ingram, K4TWJ*
- 78 RADIO CLASSICS:** Eras of the Golden Age *By Joe Veras, K9OCO*



p. 34

## departments

- 28 PUBLIC SERVICE:** Searching for hams *By Bob Josuweit, WA3PZO*
- 34 BEGINNER'S CORNER:** Radio control—ham radio's "other radio"  
*By Wayne Yoshida, KH6WZ*
- 44 WASHINGTON READOUT:** FCC creates Public Safety and Homeland Security Bureau  
*By Frederick O. Maia, W5YI*
- 60 THE WEEKENDER:** An LED Nite-Lite for portable operation  
*By Phil Salas, AD5X*
- 66 WHAT'S NEW:** Automatic earphone retractor, 75-amp switching power supply, USB rig-control interface, and more  
*By Karl T. Thurber, Jr., W8FX*
- 85 DX:** DXpeditions into the New Year *By Carl Smith, N4AA*
- 90 AWARDS:** Single band/mode endorsements for USA-CA All Counties; HB9BYZ, USA-CA All Counties #1139  
*By Ted Melinosky, K1BV*
- 93 VHF PLUS:** An introspective look at the future of AMSAT  
*By Joe Lynch, N6CL*
- 97 CONTESTING:** Improving your CW contesting skills; 2005 CQ WW DX SSB & CW Contests Errata  
*By John Dorr, K1AR*
- 100 PROPAGATION:** Check out what's happening in the "basement"; CQ WW CW Contest forecast; DX Charts for December 15, 2006 to February 15, 2007  
*By Tomas Hood, NW7US*



p. 78

- 8 ZERO BIAS**
- 9 HAM RADIO NEWS**
- 10 ANNOUNCEMENTS**
- 10 OUR READERS SAY**
- 40 READER SURVEY**
- 109 ANNUAL INDEX**
- 112 HAM SHOP**

**MINI COOPER SHOWN WITH  
GP-5 UNIVERSAL LIP  
MOUNT AND COAX CABLE  
COMBINATION.  
NO HOLES TO DRILL!**

MODEL	ANT CONN / COAX CONN
CP-5M	SO-239 / PL-259
CP-5NMO	NMO / PL-259
CP-5 3/8-24	3/8-24 / PL-259

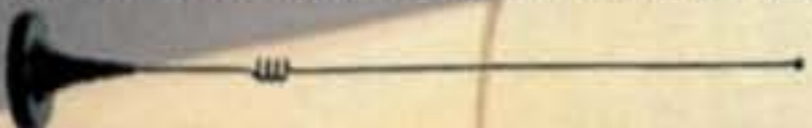
Heavy-duty adjustable lip mount bracket with 16' 6" deluxe cable assy includes 18" mini RG-188AU type coax for weather seal entry.

Max antenna 70"  
Attaches to trunk side/  
van door/SUV door/  
truck doors etc..



**COMET CA-2X4SR DUAL-BAND, SUPER WIDE-RANGE 2M/440MHZ W/FOLD-OVER**

Gain & Wave: 146MHz 3.8dBi 5/8 wave • 446MHz 6.3dBi 5/8 wave x 3 • Length: 40" • Conn: PL-259 • Max Pwr: 150W  
2:1 VSWR: 140-160MHz and 435-465MHz • One Antenna for operating on Amateur and Emergency Service Frequencies



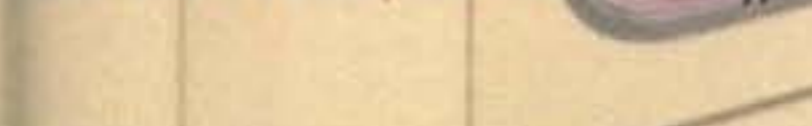
**COMET M-24 (M/B/S) 2M/440MHZ DUAL-BAND MAG MOUNT** Gain: 1.7/4.1dBi • Length: 19.5" • Max Pwr: 80W

Coax Length: 12" • Conn choices: M-24M PL-259, M-24B BNC, M-24S SMA



**COMET SBB-1 / SBB-1NMO FLEXIBLE DUAL-BAND 2M/440MHZ W/RUBBERIZED ELEMENT**

Gain & Wave: 146MHz 1.7dBi 1/4 wave, 446MHz 2.15dBi 1/2 wave • Length: 16" • Max Pwr: 60W  
Conn: SBB-1 PL-259, SBB-1NMO: NMO type



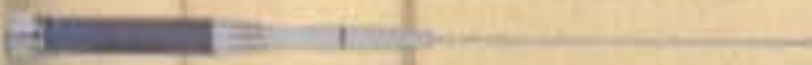
**Maldol AX-50 DUAL-BAND 2M/440MHz**

Gain & Wave: 2M 1/4 wave • 70cm 5.0dBi 9/8 wave • Length: 21" • Conn: PL-259 • Max Power: 60W



**Maldol AX-75 DUAL-BAND 2M/440MHz W/FOLD-OVER**

Gain & Wave: 2M 1/2 wave center load 3.2dBi • 70cm 5/8 wave x 2 5.7dBi • Length: 30" • Conn: PL-259 • Max Power: 60W



**Maldol AX-95 DUAL-BAND 2M/440MHz W/FOLD-OVER**

Gain & Wave: 2M 1/2 wave center load 3.3dBi • 70cm 5/8 wave x 2 5.8dBi • Length: 38" • Conn: PL-259 • Max Power: 60W



**COMET B-10 / B-10NMO DUAL-BAND 2M/440MHz**

Gain & Wave: 146MHz 0dBi 1/4 wave • 446MHz 2.15dBi 1/2 wave • Length: 12"  
• Conn: B-10 PL-259, B-10NMO - NMO style • Max Pwr: 50W



**COMET SBB-2 / SBB-2NMO DUAL-BAND 2M/440MHz**

Gain & Wave: 146MHz 2.15dBi 1/4 wave • 446MHz 3.8dBi 5/8 wave center load • VSWR: 1.5:1 or less • Length: 18"  
• Conn: SBB-2 PL-259 • SBB-2NMO NMO style • Max Pwr: 60W



**Maldol EX-107RB / EX-107RBNMO DUAL-BAND 2M/440MHz**

Gain & Wave: 146MHz 2.6dBi 1/2 wave • 446MHz 4.9dBi 5/8 wave x 2 • VSWR: 1.5:1 or less • Length: 29"  
• Conn: EX-107RB PL-259 • EX-107RBNMO NMO style • Max Pwr: 100W



**COMET SBB-5 / SBB-5NMO DUAL-BAND 2M/440MHz W/FOLD-OVER**

Gain and wave: 146MHz 3dBi 1/2 wave • 446MHz 5.5dBi 5/8 wave x 2 • Length: 39"  
• Conn: SBB-5 PL-259, SBB-5NMO - NMO style • Max Pwr: 120W



**COMET SBB-7 / SBB-7NMO DUAL-BAND 2M/440MHz W/FOLD-OVER**

Gain & Wave: 146MHz 4.5dBi 6/8 wave • 446MHz 7.2dBi 5/8 wave x 3 • Length: 58"  
• Conn: SBB-7 PL-259, SBB-7NMO - NMO style • Max Pwr: 70W

**COMET BNC-24 DUAL-BAND 2M/70CM HT ANTENNA** RX range: 100-1200MHz  
• Gain: 2.15/3.5dBi • Length: 17" • Conn: BNC Super flexible featherweight whip

**COMET SMA-24 DUAL-BAND 2M/70CM HT ANTENNA** RX range: 100-1200MHz  
• Gain: 2.15/3.5dBi • Length: 17" • Conn: SMA Super flexible featherweight whip

**COMET SMA-503 DUAL-BAND 2M/70CM HT ANTENNA** RX range: 100-1200MHz  
• Length: 8.75" • Conn: SMA

**Maldol MH-209 (BNC Conn) MH-209SMA (SMA Conn) 2M/70CM DUAL-BAND HT ANTENNAS**  
3" length, soft rubber cover. Good performance in a small package!

Life is a **JOURNEY**  
Enjoy the ride!

**COMET**  
and Maldol Mobile

For a complete catalog, call or visit your local dealer.

Or contact NCG Company: 1275 N. Grove Street, Anaheim, CA 92806

714-630-4541 • 800-962-2611 • FAX 714-630-7024 • www.natcommgroup.com

# The Hottest Field Gear Anywhere!



**HF/VHF/UHF Portable Operation  
Just Got a Lot More Powerful!**

## FT-897D

HF/50/144/430 MHz  
100 W All Mode Transceiver  
(144 MHz 50 W/430 MHz 20 W)

**TCXO DSP 60 m Band**



**HF/VHF/UHF Multimode Mobile  
Transceiver, now Including Built-in  
DSP and 60-Meter Coverage!**

## FT-857D

HF/50/144/430 MHz  
100 W All Mode Transceiver  
(144 MHz 50 W/430 MHz 20 W)

**DSP 60 m Band**

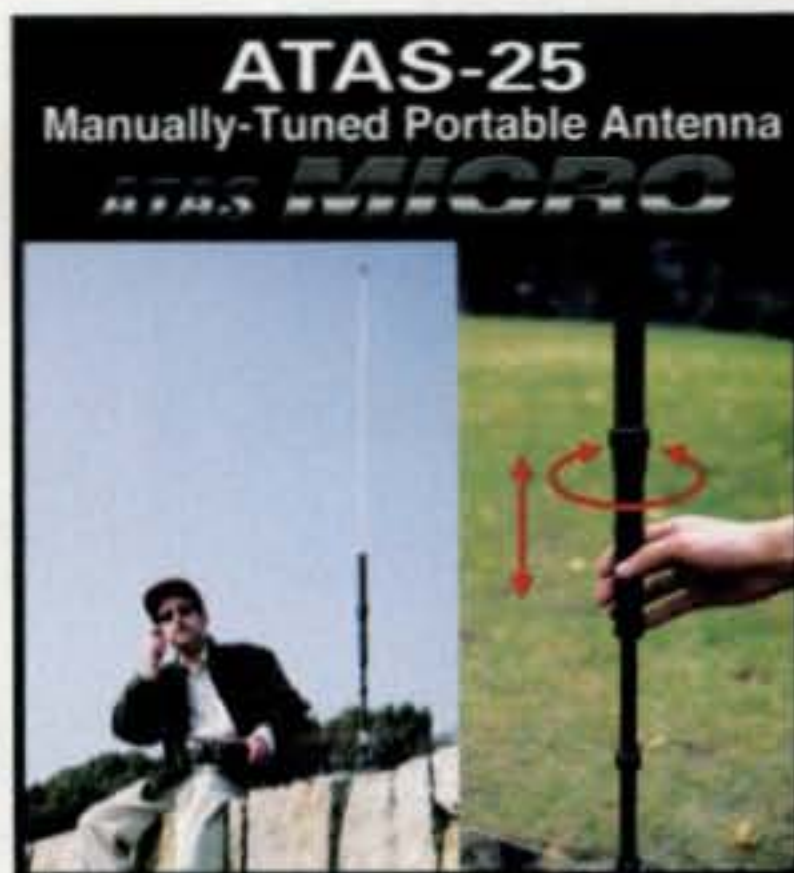


**REAL PERFORMANCE,  
REALLY PORTABLE**

## FT-817ND

HF/50/144/430 MHz  
5 W All Mode Transceiver (AM 1.5 W)

**60 m Band**



**ATAS-25**  
Manually-Tuned Portable Antenna

**ATAS MICRO**

## Automatic Matching for FT-897/857 Series Transceivers

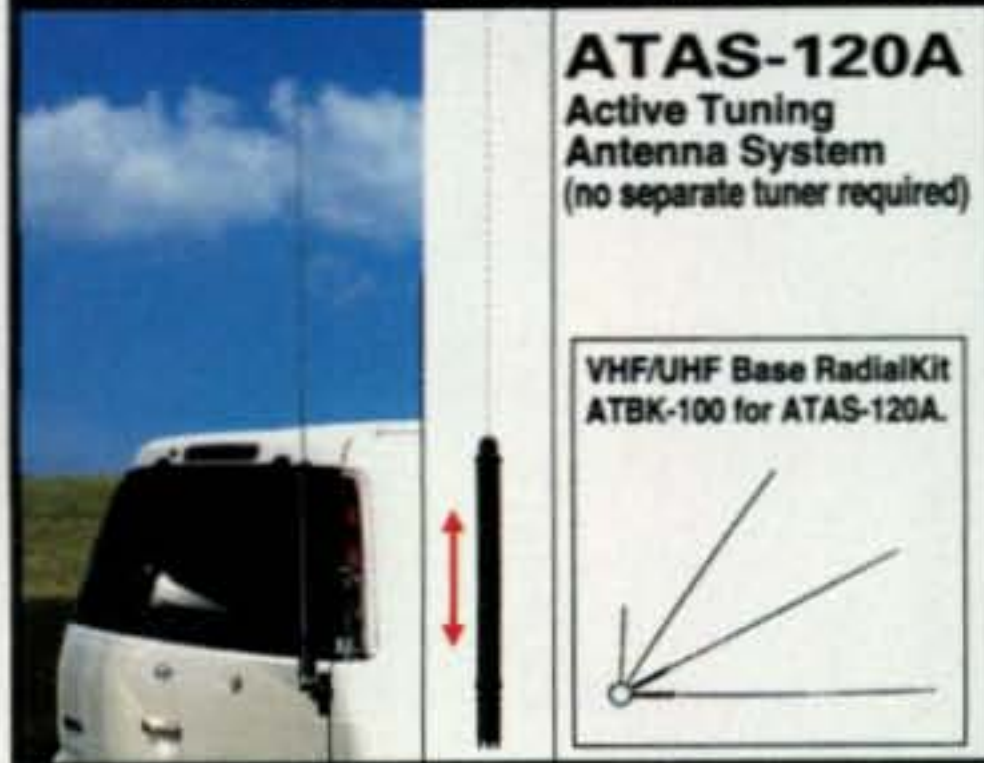


**FC-40**  
Automatic-Matching  
200-Memory  
Antenna Tuner

**WATERPROOF**

- Operational on 1.8 ~ 54 MHz when used with 66' (or longer) wire, or 7~ 54 MHz with standard 8.2' whip antenna (wire/whip antenna not supplied).
- Required Drive Power: 4 ~ 60 Watts. Maximum TX Power: 100 Watts.

## Mobile Auto-Resonating 7-430 MHz for FT-897/857 Series Transceivers



**ATAS-120A**  
Active Tuning  
Antenna System  
(no separate tuner required)

VHF/UHF Base Radial Kit  
ATBK-100 for ATAS-120A.

For the latest Yaesu news, visit us on the Internet:  
<http://www.vertexstandard.com>

Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

**YAESU**  
Choice of the World's top DX'ers™

Vertex Standard  
US Headquarters  
10900 Walker Street  
Cypress, CA 90630 (714)827-7600



# A TOUGH RADIO FOR A TOUGH WORLD!

The ruggedly-built new FT-1802M brings you Yaesu's legendary mechanical toughness, along with outstanding receiver performance and crisp, clean audio that will get your message through!



- 50 Watts of RF Power Output.
- Extended Receive: 136 – 174 MHz.
- Keyboard entry of frequencies directly from microphone.
- Illuminated front panel keys for nighttime use.
- 221 Memory Channels with Alpha-numeric labeling.
- Eight Memory Banks for organizing Memory Channels.
- Dedicated 10-channel NOAA Weather Broadcast Channel Bank (U.S. version).
- Adjustable Mic Gain, and Wide/Narrow Deviation & Receiver Bandwidth.
- Built-in CTCSS and DCS Encoder/Decoder circuits.
- Four user-programmable "Soft" keys on microphone, for access to Menu items or front panel key functions.
- Automatic Repeater Shift (ARS), Automatic Power-Off (APO), and Busy Channel Lock-Out (BCLO) features.
- CW Trainer: Practice Morse Code between QSOs!
- Security Password to help prevent unauthorized use.
- One-touch access to Yaesu's renowned WiRES-II™ Internet Linking System.



Ultra Rugged 50 W VHF FM Transceiver

## FT-1802M

Actual Size

For the latest Yaesu news, visit us on the Internet:  
<http://www.vertexstandard.com>

Specifications subject to change without notice. Some accessories and/or options may be required in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

**YAESU**  
Choice of the World's Top 100 Firms™  
Vertex Standard  
US Headquarters  
10900 Walker Street  
Cypress, CA 90630 (714)827-7600

## Patience

I've been learning a lot about patience over the past several weeks. It all started in late August at the Boxboro Hamfest in Massachusetts, where I couldn't resist investing \$20 in a "Two Tinned Tunas" QRP transmitter kit marketed by Rex Harper, W1REX. The "Two Tinned Tunas" kit is the latest version of the classic "Tuna Tin Two" design by the late Doug DeMaw, W1FB. Rex updated some of the components and added a switching circuit to make it easy to use the little transmitter with the receiver section of your regular transceiver. Plus, he developed a detailed set of step-by-step instructions with illustrations on a mini-CD that's included with the kit. (Details on the kit are in this month's "QRP" column by Dave Ingram, K4TWJ, elsewhere in this issue.) This was perfect for me since I haven't built a kit in about 25 years and really needed the pictorial guidance. Only problem was that some of the steps weren't totally clear, and both Rex and I needed to exercise a lot of patience as I queried him on this part or that step and he not only answered my questions but updated the instruction guide as we went along to clarify things for future builders (for those of you who have already purchased the kit, the latest version of the illustrated manual is available on Rex's website at <http://www.megalink.net/~w1rex/QRPme>, and everything is now crystal-clear). I had great fun building the kit and it has certainly rekindled my interest in building more kits in the future. Thank you, Rex.

I had hoped to have the project completed and on the air by the time I wrote this, but another exercise in patience got in the way. In late September, I managed to come down with a very nasty strain of pneumonia that put me in the hospital for a week while the doctors tried to figure out exactly what it was! A lot of patience was required while waiting for various blood cultures to come back, and for a definitive diagnosis. Even more patience was needed after getting home, as this particular type of pneumonia requires at least a month of treatment and the recovery is slow and gradual. Kit-building, e-mail reading and article editing went on hold until I built up enough strength to focus on such things. [We weren't too worried about the magazine, though, since we were already pretty well set for this issue. That was a good thing because I couldn't even start to think about work for at least a week after coming home from the hospital. Even now, in mid-October, I'm up to only a few hours a day of at-home working.] Patience is definitely required...

Speaking of patience, our collective patience with the FCC finally paid off in mid-October with the release of a Report & Order in the "Omnibus" rulemaking on a variety of petitions, some of which had been waiting up to five years for resolution, and on which it had been nearly two years since the Commission had issued a Notice of Proposed Rule Making (WT 04-140). Chief among these petitions was the ARRL's request for "refarming" the HF Novice bands, which has now resulted in a major expansion of HF phone bands along with major gains in CW spectrum for Novices and Technicians who have passed their code tests. A variety of other actions were taken as well. Our summary of the FCC's actions is on page 2.

A little more patience will be required on another long-standing FCC rulemaking action, its proposal for eliminating all code exams (WT 05-235) which was the subject of more than a dozen petitions in late 2003 and which has been awaiting a Commission decision for more than a year. Our patience is not endless, of course, and our feeling at this point is that the FCC needs to make a decision soon. We believe we can all live with whatever decision is made, but that the current uncertainty over the future of code testing is holding many people back from upgrading their licenses.

Another area in which I personally am losing patience is with those people who have no patience. For example, the ham in Eastern Europe whose CQWW contest score was

\*e-mail: [w2vu@cq-amateur-radio.com](mailto:w2vu@cq-amateur-radio.com)



The Two Tinned Tunas kit by Rex Harper, W1REX. In addition to the cool label, Rex managed to get an antique canning machine that lets him pack virtually all of the parts for the kit, including the mini-CD instruction manual, inside the flip-top tuna can!

reported in the wrong category, and who called my home phone on a weekend to try to get it corrected. It happened to be the weekend that I was in the hospital, but it was clear to my wife that he wouldn't take "wait" for an answer, and indeed he wouldn't hang up until she had called me on her cellphone at the hospital to get a response. I'm not sure what he expected me to be able to do from a hospital bed on a weekend, but he certainly expected something. Repeat after me, *it's only a hobby, it's only a hobby*.

Next, after I got home, I heard from an occasional CQ author who absolutely refused to accept the fact that he'd have to wait until I was feeling better before his article submission was going to be read. He went round and round on the matter with our publisher and with me, insisting that there *must* be someone else on staff who could read his article immediately. Patience, my friend, patience.

I must note that he is *not* representative of our authors in general. I had several e-mails waiting for me when I finally returned to cyberspace after an absence of nearly a month, asking whether I'd received/read various article submissions. I explained that I'd been ill and the nearly universal response, besides this one gentleman, was "don't worry, take your time, concentrate on feeling better. I'll look forward to hearing from you once you're up to reading things again." To those authors, I offer my thanks and appreciation for your understanding and your patience.

Speaking of e-mail, we switched over to a new e-mail server on [cq-amateur-radio.com](http://cq-amateur-radio.com) on September 1, and while I was supposed to have time to move mail from the old server to the new one before the old one was taken offline, our web guru informed me that while I was in the hospital, the old server literally went up in flames. So I have lost all e-mail prior to September 1. If you had a letter to the editor or an article submission pending that was submitted before September 1, please contact me to see if I had downloaded it or whether it was still in my in-box and will need to be resubmitted.

### A Light in the Darkness

It's that time of year again when daylight is shortest here in the northern hemisphere and virtually all of the northern cultures and religions have developed holidays that bring additional light into our homes and communities at this dark time of year. Whether you celebrate Christmas, Chanukah or one of many other observances that light up our lives a little more, all of us at CQ wish you the very best of holiday celebrations. May your holidays and the new year be filled with joy, good health, and—considering the prevalence of family visits this time of year—with extra patience as well.

73, Rich, W2VU

## ARRL Take FCC to Federal Court Over BPL Rules

The ARRL is taking the FCC to federal court over some of its rules regarding Broadband over Power Lines, or BPL. In mid-October, the League notified the U.S. Court of Appeals that it plans to appeal certain aspects of the FCC's rules governing BPL systems. According to the *ARRL Letter*, the appeal will focus on the FCC's decision last summer to apply a different standard to dealing with interference to mobile stations than to fixed stations, as well as its refusal to change its standard for measuring interference levels despite evidence presented by the ARRL and others that the standard being used is, in the words of ARRL CEO Dave Sumner, K1ZZ, "clearly, demonstrably and inarguably wrong." The League says the FCC is trying to redefine harmful interference and that its actions exceed the Commission's authority, violate international regulations and the Communications Act of 1934, and "are arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law." At press time, there was no indication of when any court action might occur.

## Hams Included in Emergency Communications Act

Amateur radio operators are formally included as part of the emergency communications community under provisions of a law recently passed by Congress and signed into law by President Bush. According to the *ARRL Letter*, a section of the Department of Homeland Security's 2007 appropriations bill, subtitled the "21st Century Emergency Communications Act," mandates the creation of Regional Emergency Communications Coordination Working Groups around the country, with members to include amateur radio operators as well as representatives of telephone and broadband companies, local news media and cable operators, hospitals, utilities and others. The regional working groups will be part of the Homeland Security department's new Office of Emergency Communications.

## FCC Goes After Vanity Call "Frequent Filers"

The FCC has told two hams, one in Virginia and one in California, that they appear to be abusing the vanity call-sign system. In each case, the ham had requested one call, held it for a period of time, then requested another before cancelling that call sign and switching back to the first one. FCC letters noted that their actions prevented anyone else from applying for either call for two years, something that "appears to be an abuse of Commission processes." They were each asked to explain their multiple filings and to "indicate which call sign you wish to retain." No word on whether the call given up will then immediately be put back into the pool of available call signs.

## US Wins First World Foxhunting Medal

For the first time in its nine years of participating in the ARDF (Amateur Radio Direction Finding) World Championships, a member of the United States team has won a medal in the event. According to "Newslines," Nadia Scharlau of Cary, North Carolina won the bronze medal for her age and gender category in the 80-meter on-foot competition. Nadia is the wife of Charles Scharlau, NZ0I, who also competed but did not medal at the event in Primorsko, Bulgaria, in September. Charles and Nadia were co-chairs of the US national ARDF Championships this past spring. They were among 13 members of the US team to compete in Bulgaria against radio-orientees from 30 different countries.

## First US Contact Reported on 500 kHz

U.S. hams operating under an experimental license from the FCC report making their first two-way contact on 500 kHz. The contact came on September 21, between stations in North Carolina and Tennessee, over a distance of about 300 miles, according to the *ARRL Letter*. One-way reception reports of up to 1500 miles have been recorded. For more about the experiments on 500 kHz, see this month's Propagation column on page 100.

## Hams Try to Replicate Marconi's First Transatlantic Reception

One hundred five years ago, in December, 1901, Guglielmo Marconi sat at a receiving station in Newfoundland and copied the letter "S" being sent repeatedly in Morse code by his team in Cornwall, England—the first transatlantic wireless reception. Ever since then, hams and others have debated just how the signal made the trip, especially considering the frequency, estimated to be around 900 kHz, and the time of day—afternoon in Newfoundland. Now, the *ARRL Letter* reports, two groups of hams in Newfoundland and England will try to recreate the signals on 160 meters. They are setting up a beacon in Cornwall—GB3SSS—on 1960 kHz, that will transmit around the clock in CW and PSK-31 between November 2006 and February 2007, with low-frequency experimenter Joe Craig, VO1NA, listening in Newfoundland. Keith Matthew, G0WYS, of the Poldhu Amateur Radio Club in Cornwall, explained that "(t)he winter of 1901 coincided with a sunspot minimum, and it was realized that this coming December, 2006, should show similar conditions to those of December, 1901." The beacon, said Matthew, "will help understand the possibility of low sunspot number transatlantic medium wave propagation 24 hours a day, but especially 1400 through 1800 UTC," or 10:00 AM through 2:00 PM local time in Newfoundland. The Antique Wireless Association's club station, W2AN, will also monitor from its base in upstate New York.

## New CubeSat in Orbit

Undaunted by the loss earlier this year of more than a dozen tiny "CubeSat" satellites (see "VHF-Plus," November 2006 CQ) due to a launch failure, a Japanese CubeSat named HITSAT was successfully launched from Japan on September 22. The AMSAT News Service reports that the satellite was designed and built by the Hokkaido Cubesat Development Ham Club at Hokkaido Institute of Technology. It has a CW telemetry downlink on 437.275 MHz and a 1200 baud FM packet downlink on 437.425 MHz. More information on the telemetry format is available at <<http://ww.hit.ac.jp/~satori/g/e/hitsatgs.html>>. Additional information on HITSAT and other CubeSats is available at <<http://showcase.netins.net/web/wallio/CubeSat.htm>>. The new CubeSat has been designated HIT-SAT-OSCAR 59, or HO-59.

## WRTC-2010 Slated for Russia

The next World Radiosport Team Championship (WRTC) competition, in 2010, will be held in Russia. The *ARRL Letter* says the event will be held in the vicinity of Moscow in conjunction with the IARU HF World Championship contest in July, 2010. The most recent WRTC was held this past summer in Brazil. It has become the premier event in world-class contesting, pitting teams of contesters from different countries against each other in similarly-equipped stations within the same geographic area.

Additional and updated news is available on the Ham Radio News page of the CQ website at <<http://www.cq-amateur-radio.com>>. For breaking news stories, plus info on additional items of interest, sign up for CQ's free online newsletter service. Just click on "CQ Newsletter" on the home page of our website.

The following special event stations are scheduled for December:

**W2W**, in commemoration of the Japanese attack on Pearl Harbor, Baltimore, Maryland; Historical Electronics Museum ARC; December 2-10 on 7.241, 14.241, 7.041, and/or 14.041 MHz. Other bands and modes may be used as conditions permit. For certificate send large SASE with enough postage for 2 ounces, or SASE for QSL, to HEMARC, Att: Nick Yokanovich, P.O. Box 1693, MS 4015, Baltimore, MD 21203. SWLs may apply for a certificate as well.

**KC5OUR**, from Christmas from Bethlehem, New Mexico celebration; 1400Z December 16 through 2300Z December 24 on 7.270, 14.270, 21.270, 28.370 MHz. For QSL send SASE to Valencia County ARA, P.O. Box 268, Peralta, NM 87042.

**W9DK**, from commemoration of the Manitowoc County Radio Club 60th anniversary, Manitowoc, Wisconsin; December 9 and 10 on 40, 20, 17, and 15 meters SSB, Digital, and CW. QSL with SASE via W6BSF or W9DK.

The following hamfests, etc., are slated for December 2006 and early January 2007:

Dec. 2, **Superstition ARC Annual Hamfest**, Mesa Community College Campus, Mesa, Arizona. For more information, contact Ron McKee, KD7FGY, e-mail: <kd7fgy@cox.net> or <hamfest2006@wb7tjd.org>. (Talk-in 147.120 PL 162.2, 449.200 PL 100 Hz; registration for exams begins at 8 AM, exams 9-11 AM)

Jan. 7, **Ham Radio University & ARRL New York City/Long Island Section Convention**, Briarcliffe College, Bethpage, Long Island, New York. Includes forums on satellite communications, low-power operating, emergency communications, antennas, HF digital communications, plus there will be booths set up about organizations and clubs, including the Red Cross, Salvation Army, National Weather Service, etc. Special event station W2V will also be on the air and VE exams are scheduled. For details, go to: <www.HamRadioUniversity.org>.

### Greedy DXers?

Editor, CQ:

I enjoy your editorial each month. I also read your sidebar to the 3YØX DXpedition article (June 2006 CQ). I can sympathize with Mike, K8IW, that he was not able to "break the pile-up by calling for hours and hours." I also tried for the Kure Island DXpedition, *not* making a contact. However, blaming others for not being successful or "calling and calling for hours and hours" may not be the answer.

At my QTH in Florida, 3YØX was barely readable above the noise level, (S3-4) most of the times I listened for them on 10-20 meters. I did manage to work them on 15m and 10m SSB. Actually, I got them twice on 15m, as my QSO was not listed on the website for a couple of days and it was a very poor contact. I got nervous. I might be considered one of the greedy ones, too! I really wanted that QSL from Antarctica.

My station is not "Big Gun." No amp or tower. When I could, I listened at different times each day and on each band 10-20m, and when I felt I had a shot, I snuck in my call. I did not get them on the first or the second attempt, but I managed to get them. I know my report was not the 5 & 9 received on the QSL!

My point is that every time I go fishing, I don't always expect to catch a trophy fish. When my tackle breaks with a big one, I have to keep trying with what I have. The same goes for DXing: I have to try a different band or mode. I compare DXing to fishing. What fun or where would the challenge be to land a trophy fish or rare callsign on every cast or on every call? There is a lot of luck in both hobbies. I am not a very active DXer or fisherman, and I most certainly do not claim to be an expert on either subject. In my opinion it is just too easy to catch a big fish with big tackle or work the rare ones with a big station. I will never be a "Big Gun" or "Top Hook," but I can still have a lot of fun playing the game.

George Porth, NY4FD

### EDITORIAL STAFF

Richard S. Moseson, W2VU, Editor  
Gail M. Schieber, K2RED, Managing Editor

### CONTRIBUTING EDITORS

George Jacobs, W3ASK, Contributing Ed. Emeritus  
Kent Britain, WA5VJB, Antennas  
John Dorr, K1AR, Contesting  
Tomas Hood, NW7US, Propagation  
Dave Ingram, K4TWJ, Special Interests & QRP  
Bob Josuweit, WA3PZO, Public Service  
Joe Lynch, N6CL, VHF  
Frederick O. Maia, W5YI, FCC Correspondent  
Irwin Math, WA2NDM, Math's Notes  
Ted Melinosky, K1BV, Awards & USA-CA  
Ken Neubeck, WB2AMU, At-Large  
Jeff Reinhardt, AA6JR, Mobile/Radio Magic  
Don Rotolo, N2IRZ, Digital  
Phil Salas, AD5X, Weekender  
Carl Smith, N4AA, DX  
Karl T. Thurber, Jr., W8FX, What's New  
Joe Veras, K9OCO, Radio Classics  
Gordon West, WB6NOA, At-Large  
Wayne Yoshida, KH6WZ, Beginners

### AWARD MANAGEMENT

Floyd Gerald, N5FG, WAZ Award  
Steve Bolia, N8BJQ, WPX Award  
Ted Melinosky, K1BV, USA-CA Award  
Billy Williams, N4UF, CQ DX Award

### CONTEST MANAGEMENT

Robert Cox, K3EST, WW DX Contest Director  
John Lindholm, W1XX, VHF Contest Director  
Steve Merchant, K6AW, WPX Contest Director  
John Sweeney, K9EL, DX Marathon Director  
David L. Thompson, K4JRB, 160M Contest Dir.  
Glenn Vinson, W6OTC, RTTY Contest Director

### BUSINESS STAFF

Richard A. Ross, K2MGA, Publisher  
Don Allen, W9CW, Advertising Manager  
Emily Leary, Sales Assistant  
Sal Del Grosso, Controller  
Doris Watts, Accounting Department

### CIRCULATION STAFF

Melissa Gilligan, Operations Manager  
Cheryl DiLorenzo, Customer Service Manager  
AnnMarie Auer, Customer Service

### PRODUCTION STAFF

Elizabeth Ryan, Art Director  
Barbara McGowan, Associate Art Director  
Dorothy Kehrwieler, Production Manager  
Emily Leary, Assistant Production Mgr./Webmaster  
Patricia Koh, Production Assistant  
Hal Keith, Illustrator  
Larry Mulvehill, WB2ZPI, Staff Photographer  
Joe Veras, K9OCO, Special Projects Photographer  
Doug Bailey, KØFO, Website Administrator

A publication of



CQ Communications, Inc.  
25 Newbridge Road  
Hicksville, NY 11801 USA.

Offices: 25 Newbridge Rd., Hicksville, NY 11801, Telephone 516-681-2922; Fax 516-681-2926. E-mail: cq@cq-amateur-radio.com. Web site: www.cq-amateur-radio.com. Periodical postage paid at Hicksville, NY 11801 and additional offices. Statement of Ownership, Management and Circulation, September 29, 2006. CQ Amateur Radio, 25 Newbridge Road, Hicksville, NY 11801. Publication #007-893X. Issued monthly, subscription price \$31.95 per year (12 issues). Publisher: Richard A. Ross; Editor: Richard S. Moseson; owned by CQ Communications, Inc. Stockholders: Richard A. Ross. Circulation (Average of Preceding 12 Months): Net Press Run 39,400, Mail Subscriptions 20,763 Sales Through Dealers and News Agents 11,735, Other Classes Mailed 225, Total Paid 32,723 Free Distribution 375, Total Distribution 33,098, Copies Not Distributed 1,800, Total 34,898 Circulation (single issue nearest filing date): 39,680, Mail Subscriptions 20,650, Sales Through Dealers and News Agents 11,247, Other Classes Mailed 225, Total Paid 32,122, Free Distribution 390, Total Distribution 32,512, Copies Not Distributed 1,750, Total 34,262 s/Dorothy Kehrwieler, Business Manager. Entire contents copyrighted 2006 by CQ Communications, Inc.

Printed in the U.S.A.

Postmaster: Please send change of address to:  
CQ Amateur Radio, 25 Newbridge Rd., Hicksville, NY 11801

# hy-gain® ROTATORS

... the first choice of hams around the world!

## HAM-IV

The most popular rotator in the world!

For medium communications arrays up to 15 square feet wind load area. New 5-second brake delay! New Test/Calibrate function. New low temperature grease permits normal operation down to -30 degrees F. New alloy ring gear gives extra strength up to 100,000 PSI for maximum reliability. New indicator potentiometer. New ferrite beads reduce RF susceptibility. New Cinch plug plus 8-pin plug at control box. Dual 98 ball bearing race for load bearing strength and electric locking steel wedge brake prevents wind induced antenna movement. North or South center of rotation scale on meter, low voltage control, max mast size of 2 1/16 inches.

HAM-IV  
\$559<sup>95</sup>



## TAILTWISTER SERIES II

For large medium antenna arrays up to 20 sq. ft. wind load. Available with DCU-1 Pathfinder digital control (T2XD) or standard analog control box (T2X) with new 5-second brake delay and new Test/Calibrate function. Low temperature grease, alloy ring gear, indicator potentiometer, ferrite beads on potentiometer wires, new weather-proof AMP connectors plus 8-pin plug at control box, triple bearing race with 138 ball bearings for large load bearing strength, electric locking steel wedge brake, North or South center of rotation scale on meter, low voltage control, 2 1/16 inch max. mast.



T-2X  
\$649<sup>95</sup>

T-2XD  
\$1029<sup>95</sup>

with DCU-1

## CD-45II

For antenna arrays up to 8.5 sq. feet mounted inside tower or 5 sq. ft. with mast adapter. Low temperature grease good to -30 F degrees. New Test/Calibrate function. Bell rotator design gives total weather protection, dual 58 ball bearing race gives proven support. Die-cast ring gear, stamped steel gear drive, heavy duty, trouble free gear train, North center scale, lighted directional indicator, 8-pin plug/socket on control unit, snap-action control switches, low voltage control, safe operation, takes maximum mast size to 2 1/16 inches. MSLD light duty lower mast support included.



CD-45II  
\$389<sup>95</sup>

### HAM IV and HAM V Rotator Specifications

Wind Load capacity (inside tower)	15 square feet
Wind Load (w/ mast adapter)	7.5 square feet
Turning Power	800 in.-lbs.
Brake Power	5000 in.-lbs.
Brake Construction	Electric Wedge
Bearing Assembly	dual race/96 ball bearings
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	8
Shipping Weight	26 lbs.
Effective Moment (in tower)	2800 ft.-lbs.

### TAILTWISTER Rotator Specifications

Wind load capacity (inside tower)	20 square feet
Wind Load (w/ mast adapter)	10 square feet
Turning Power	1000 in.-lbs.
Brake Power	9000 in.-lbs.
Brake Construction	Electric Wedge
Bearing Assembly	Triple race/138 ball brngs
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	8
Shipping Weight	31 lbs.
Effective Moment (in tower)	3400 ft.-lbs.

### CD-45II Rotator Specifications

Wind load capacity (inside tower)	8.5 square feet
Wind Load (w/ mast adapter)	5.0 square feet
Turning Power	600 in.-lbs.
Brake Power	800 in.-lbs.
Brake Construction	Disc Brake
Bearing Assembly	Dual race/48 ball brings
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	8
Shipping Weight	22 lbs.
Effective Moment (in tower)	1200 ft.-lbs.

## HAM-V

HAM-V  
\$949<sup>95</sup>  
with DCU-1

For medium antenna arrays up to 15 square feet wind load area. Similar to the HAM IV, but includes DCU-1 Pathfinder digital control unit with gas plasma display. Provides automatic operation of brake and rotor, compatible with many logging/contest programs, 6 presets for beam headings, 1 degree accuracy, auto 8-second brake delay, 360 degree choice for center location, more!



### ROTATOR OPTIONS

**MSHD, \$99.95.** Heavy duty mast support for T2X, HAM-IV and HAM-V.  
**MSLD, \$39.95.** Light duty mast support for CD-45II and AR-40.  
**TSP-1, \$34.95.** Lower spacer plate for HAM-IV and HAM-V.

### Digital Automatic Controller

Automatically controls T2X, HAM-IV, V rotators. 6 presets for favorite headings, 1 degree accuracy, 8-sec. brake delay, choice for center of rotation, crisp plasma display. Computer controlled with many logging/contest programs.



DCU-1  
\$649<sup>95</sup>



AR-40  
\$289<sup>95</sup>  
For compact antenna arrays and large FM/TV up to 3.0 square feet wind load area. Dual 12 ball bearing race. Automatic position sensor never needs resetting. Fully automatic control -- just dial and touch for any desired location. Solid state, low voltage control, safe and silent operation. 2 1/16 inch maximum mast size. MSLD light duty lower mast support included.

### AR-40 Rotator Specifications

Wind load capacity (inside tower)	3.0 square feet
Wind Load (w/ mast adapter)	1.5 square feet
Turning Power	350 in.-lbs.
Brake Power	450 in.-lbs.
Brake Construction	Disc Brake
Bearing Assembly	Dual race/12 ball bearings
Mounting Hardware	Clamp plate/steel bolts
Control Cable Conductors	5
Shipping Weight	14 lbs.
Effective Moment (in tower)	300 ft.-lbs.

### AR-35 Rotator/Controller

AR-35  
\$69<sup>95</sup>  
For UHF, VHF, 6-Meter, TV/FM antennas. Includes automatic controller, rotator, mounting clamps, mounting hardware. 110 VAC. One Year Warranty.



HDR-300A  
\$1379<sup>95</sup>

For king-sized antenna arrays up to 25 sq. ft. wind load area. Control cable connector, new hardened stainless steel output shaft, new North or South centered calibration, new ferrite beads on potentiometer wires reduce RF susceptibility, new longer output shaft keyway adds reliability. Heavy-duty self-centering steel clamp and hardware. Display accurate to 1°. Machined steel output.



### HDR-300A Rotator Specifications

Wind load capacity (inside tower)	25 square feet
Wind Load (w/ mast adapter)	not applicable
Turning Power	5000 in.-lbs.
Brake Power	7500 in.-lbs.
Brake Construction	solenoid operated locking
Bearing Assembly	bronze sleeve w/rollers
Mounting Hardware	stainless steel bolts
Control Cable Conductors	7
Shipping Weight	61 lbs.
Effective Moment (in tower)	5000 ft.-lbs.



RBD-5  
\$34<sup>95</sup>  
**NEW! Automatic Rotator Brake Delay**  
Provides automatic 5-second brake delay -- insures your rotator is fully stopped before brake is engaged. Prevents accidentally engaging brake while rotator is moving. Use with HAM II, III, IV, V, T2Xs. Easy-to-install. Includes pre-assembled PCB, hardware.

<http://www.hy-gain.com>  
Nearest Dealer, Free catalog, To Order...  
**800-973-6572**  
Voice: 662-323-9538 Fax: 662-323-6551

# hy-gain®

Antennas, Rotators & Towers  
308 Industrial Park Road, Starkville, MS 39759, USA  
Prices/specs subject to change without notice/obligation ©2006 Hy-Gain.

**Special Holiday Discounts Off Our Already Low Prices!**



# HAM RADIO OUTLET

WORLDWIDE DISTRIBUTION



**ANAHEIM, CA**  
(Near Disneyland)  
933 N. Euclid St., 92801  
(714) 533-7373  
**(800) 854-6046**  
Janet, KL7MF, Mgr.  
anaheim@hamradio.com

**BURBANK, CA**  
1525 W. Magnolia Bl., 91506  
(818) 842-1786  
**(800) 854-6046**  
Eric, KA6IHT, Mgr.  
Magnolia between  
S. Victory & Buena Vista  
burbank@hamradio.com

**OAKLAND, CA**  
2210 Livingston St., 94606  
(510) 534-5757  
**(800) 854-6046**  
Mark, W17YN, Mgr.  
I-880 at 23rd Ave. ramp  
oakland@hamradio.com

**SAN DIEGO, CA**  
5375 Kearny Villa Rd., 92123  
(858) 560-4900  
**(800) 854-6046**  
Tom, KM6K, Mgr.  
Hwy. 163 & Claremont Mesa  
sandiego@hamradio.com

**SUNNYVALE, CA**  
510 Lawrence Exp. #102  
94085  
(408) 736-9496  
**(800) 854-6046**  
Dan, K6DN, Co-Mgr.  
Howard, W6HOC, Co-Mgr.  
So. from Hwy. 101  
sunnyvale@hamradio.com

**NEW CASTLE, DE**  
(Near Philadelphia)  
1509 N. Dupont Hwy., 19720  
(302) 322-7092  
**(800) 644-4476**  
Rick, K3TL, Mgr.  
RT.13 1/4 mi., So. I-295  
delaware@hamradio.com

**PORTLAND, OR**  
11705 S.W. Pacific Hwy.  
97223  
(503) 598-0555  
**(800) 854-6046**  
Leon, W7AD, Mgr.  
Tigard-99W exit  
from Hwy. 5 & 217  
portland@hamradio.com

**DENVER, CO**  
8400 E. Iliff Ave. #9, 80231  
(303) 745-7373  
**(800) 444-9476**  
John N5EHP, Mgr.  
denver@hamradio.com

**PHOENIX, AZ**  
1939 W. Dunlap Ave., 85021  
(602) 242-3515  
**(800) 444-9476**  
Gary, N7GJ, Mgr.  
1 mi. east of I-17  
phoenix@hamradio.com

**ATLANTA, GA**  
6071 Buford Hwy., 30340  
(770) 263-0700  
**(800) 444-7927**  
Mark, KJ4VO, Mgr.  
Doraville, 1 mi. no. of I-285  
atlanta@hamradio.com

**WOODBRIIDGE, VA**  
(Near Washington D.C.)  
14803 Build America Dr.  
22191  
(703) 643-1063  
**(800) 444-4799**  
Steve, W4SHG, Mgr.  
Exit 161, I-95, So. to US 1  
virginia@hamradio.com

**SALEM, NH**  
(Near Boston)  
224 N. Broadway, 03079  
(603) 898-3750  
**(800) 444-0047**  
Chuck, N1UC, Mgr.  
Exit 1, I-93;  
28 mi. No. of Boston  
salem@hamradio.com

## DISCOVER THE POWER OF DSP WITH ICOM!



**IC-706MKIIG** All Mode Transceiver

- Proven Performance • 160-10M\*/6M/2M/70CM
- All mode w/DSP • HF/6M @ 100W, 2M @ 50W, 440 MHz @ 20W • CTCSS encode/decode w/tone scan
- Auto repeater • 107 alphanumeric memories

**IC-7000**

- IC-7000+RMK7000 = SAVE \$70
- IC-7000+AH4 = SAVE \$90
- IC-7000+AT180 = SAVE \$100 Total



**IC-718** HF Transceiver

- 160-10M\* @ 100W • 12V Operation • Simple to Use • CW Keyer Built-in • One Touch Band Switching
- Direct frequency input • VOX Built-in • Band stacking register • IF shift • 101 memories



**IC-V8000** 2M Mobile Transceiver

- 75 watts • Dynamic Memory Scan (DMS) • CTCSS/DCS encode/decode w/tone scan • Weather alert • Weather channel scan • 200 alphanumeric memories

**ID-800H**

Digital Dual Band Mobile

- 55 watt VHF/50 watt UHF • Wide RX: 118-173, 230-549, 810-999 MHz (cellular blocked on US versions)
- Analog/Digital Voice & Data • Callsign Squelch • CTCSS & DTCS Encode/Decode w/tone scan



**IC-7800** All Mode Transceiver

- 160-6M @ 200W • Four 32 bit IF-DSPs+ 24 bit AD/DA converters • Two completely independent receivers • +40dBm 3rd order intercept point



**IC-756PROIII** All Mode Transceiver

- 160-6M • 100W • Adjustable SSB TX bandwidth • Digital voice recorder • Auto antenna tuner • RX: 30 kHz to 60 MHz • Quiet, triple-conversion receiver • 32 bit IF-DSP • Low IMD roofing filter • 8 Channel RTTY TX memory • Digital twin passband tuning • Auto or manual-adjust notch with 70 dB attenuation



**IC-2720H** Dual Band Mobile

- 2M/70CM • VV/UU/VU • Wide band RX inc. air & weather bands • Dynamic Memory Scan (DMS) • CTCSS/DTCS encode/decode w/tone scan • Independent controls for each band • DTMF Encode • 212 memory channels • Remote Mount Kit Inc.



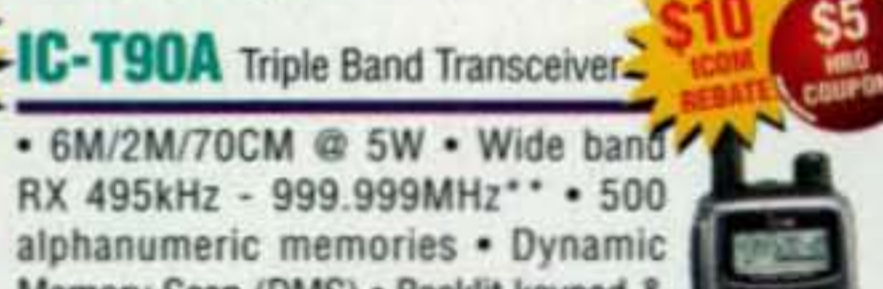
**IC-2200H** 2M Mobile Transceiver

- 65W Output • Optional D-STAR format digital operation & NEMA Compatible GPS interface • CTCSS/DTCS encode/decode w/tone scan • 207 Alphanumeric Memories • Weather Alert



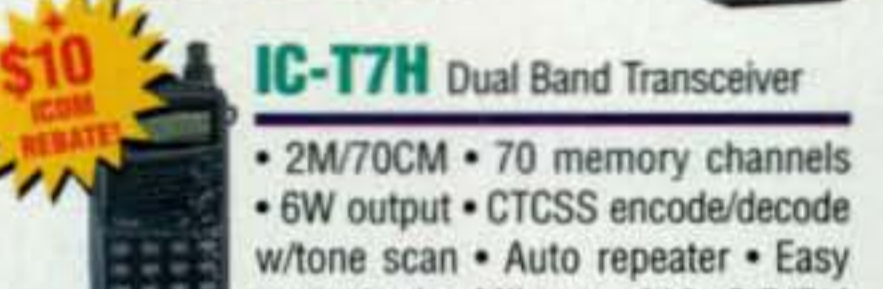
**IC-746PRO** All Mode 160M-2M

- 160-2M\* @ 100W • 32 bit IF-DSP+ 24 bit AD/DA converter • Selectable IF filter shapes for SSB & CW • Enhanced Rx performance



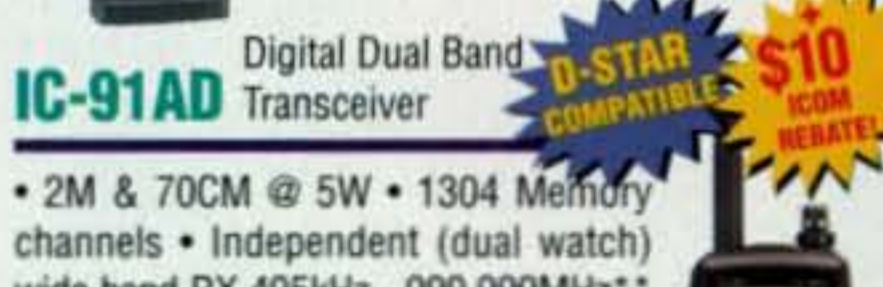
**IC-T90A** Triple Band Transceiver

- 6M/2M/70CM @ 5W • Wide band RX 495kHz - 999.999MHz\*\* • 500 alphanumeric memories • Dynamic Memory Scan (DMS) • Backlit keypad & display • CTCSS/DTCS encode/decode w/tone scan • Weather Alert



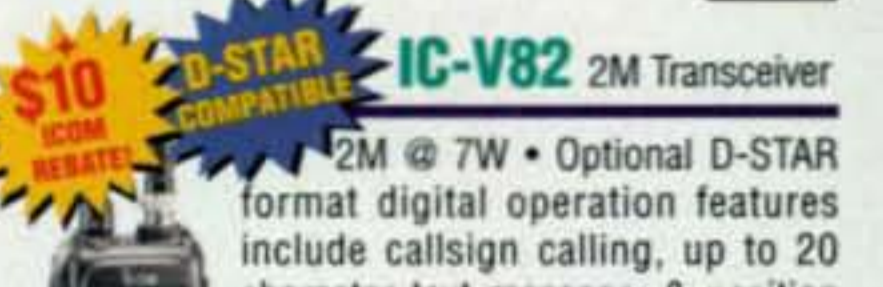
**IC-T7H** Dual Band Transceiver

- 2M/70CM • 70 memory channels • 6W output • CTCSS encode/decode w/tone scan • Auto repeater • Easy operation! • Mil spec 810, C/D/E\*\*



Digital Dual Band Transceiver

- 2M & 70CM @ 5W • 1304 Memory channels • Independent (dual watch) wide band RX 495kHz - 999.999MHz\*\* • Full dot matrix LCD • New "duplex scan" • Long-lasting Li-ion battery • D-STAR digital voice • Compliments the ID-800H mobile



**IC-V82** 2M Transceiver

- 2M @ 7W • Optional D-STAR format digital operation features include callsign calling, up to 20 character text message, & position exchange\*\* • CTCSS/DTCS encode/decode w/tone scan • Also available in a sport version and a 70CM version (IC-U82)

\*Except 60M Band. \*\*Cellular blocked, unblocked OK to FCC approved users. †Limited time only. Check with HRO for details or restrictions on any offers or promotions. \*\*For shock & vibration. \*\*\*When connected to an external GPS  
© 2006 Icom America Inc. Q4 DEC 06. The Icom logo is a registered trademark of Icom Inc. 8927

**ICOM**

**CALL TOLL FREE**

Phone Hours: 9:30 AM - 5:30 PM  
Store Hours: 10:00 AM - 5:30 PM  
Closed Sun.

Toll free, incl. Hawaii, Alaska, Canada, call routed to nearest store; all HRO 800-lines can assist you. If the first line you call is busy, you may call another.

West.....800-854-6046  
Mountain.....800-444-9476  
Southeast.....800-444-7927  
Mid-Atlantic...800-444-4799  
Northeast.....800-644-4476  
New England..800-444-0047

Look for the  
HRO Home Page  
on the  
World Wide Web  
<http://www.hamradio.com>

AZ, CA, CO, GA,  
VA residents add  
sales tax. Prices,  
specifications,  
descriptions,  
subject to change  
without notice.

# Results of the 2006 CQ WW DX 160 Meter Contests

BY DAVID L. THOMPSON,\* K4JRB

**T**he CQ WW DX 160 Meter CW and SSB Contests continue to grow in size. This year the CW section produced a record 1516 logs. There were an amazing 113 stations that made 1000 QSOs or more and 18 stations that scored over 1-million points. Conditions ranged from great to just average, but according to Jeff, VY2ZM/K1ZM, the CW contest was exciting due to the number of stations active. The CW master log jumped to 6895 stations, or an amazing increase of 1652 stations. The DXCC + WAE count did drop to 159 entities from 163 in 2005, but most observers agree that the activity more than made up for the slight DXCC drop. Records are made to be broken, and VY2ZM (K1ZM) broke the old QSO record set in 2005 by AI, D4B, by 46 QSOs (2041 Q's versus 1995 in 2005). This is the first time 2000 QSOs have been made by one station in the CQ WW 160 on either mode. Still, DXCC in one weekend seems just out of reach. OM7M reached 88 entities, which fell short of D4B's 2005 record of 91.

On SSB, conditions were only average, with some reporting little DX (or stateside) on the band. Only five stations made more than 1000 QSOs, and the top score was only just above 500K, where we had become used to one or two breaking the 1-million mark. The master log indicated 5233 stations, an increase of 144 over 2005. The number of DXCC + WAE entities was 142, which is down six from 2005. Top DXCC-getter was HG8DX with 62. In 2006, the SSB section became two different contests, one in North America and one in Europe. However, those who really were aggressive did make some good scores. There were 702 SSB entries, which is down by exactly 100 from the 2005 record number.

Thus, combining both the CW and SSB sections, there were 2218 logs. Name another 160 contest with even half that number of entries. Get on in the 2007 contests and join the fun!

Before getting into the details of who won what, let's talk about logs. All but 101 entries were e-logs. This means that we are moving closer to a common ground to judge all logs under the same rules. Certainly the scores are closer to representing the true scores for all contestants. I know many of you struggle to produce a good Cabrillo log and get frustrated when the log keeps kicking out. If you will follow the instructions, you can make corrections and get the log in. One problem I see is that some *do not look* at the robot report and thus assume you are in the database. If you do not receive a confirmation number, then you must take steps to correct the log. If all else fails, send a message to the help e-mail listed in the rules (see the November issue of *CQ* and the *CQ* website, <[www.cq-amateur-radio.com](http://www.cq-amateur-radio.com)>; also see the website, expanded results, for the list of 2006 guest operators and ops of the multi stations) and you will get help! We will help you get a log in; just ask the many who have gotten assistance in the past. We want your log, no matter the size, as it helps us determine the correct score for everyone. If you don't feel the score is very good, please send in a check log. Remember that every little bit (every log) helps. Please provide an e-mail address with your entry, as you may be contacted if a question arises.

Over the past several years two disturbing trends have emerged. First, the number of NILs (Not In Logs) has increased. We expect busted calls and a few real not-in-log, but the number of real NILs has increased dramatically. Part of this is due to the number of e-logs, but almost two out of three NILs are just logged in error. Please make sure the station you hear has come back to you before you move on! Last year the exception report only allowed for 9.9% NILs. The program has been updated, as a bogus entry was submitted



Jeff, VY2ZM, the world-high CW Single Operator entrant.



Gene, KB7Q, operated in the CW contest as a mini-DXpedition from as far east in California as you can go. He used a 7-foot helium balloon to fly a 1/4-wave wire over 60 radials.

that overflowed the field and only showed a small NIL. In addition to changing the program, we also check the top 400 claimed scores for big variations. Please make sure the Cabrillo summary has a valid claimed score included.

The second trend is an increase in uniques. In the past, the average uniques per log was under 1%. This year the average on CW increased to 1.2% and SSB jumped to 1.4%. My log checker looks for more than 3% uniques and puts them on my exception report. Stations with over 7% uniques are subject to having unverified contacts *removed*. Four more stations were warned about excessive uniques this year, and two have been disqualified in the past few years. Please consider this a warning to the wise.

## CW

Jeff went solo this time at VY2ZM and set a new North America record with nearly 2.1 million points. His score is the second highest score of all time. In addition to his record 2041 QSOs, Jeff

\*4166 Mill Stone Court, Norcross, GA 30092  
e-mail: <[thompson@mindspring.com](mailto:thompson@mindspring.com)>

reached 78 DXCC entities and 59 USA/Canada multipliers.

Yuri, K3BU, traveled to West Virginia and took N8T to the USA high Single Operator score, at 776K. Ever-present Bob, W4MYA, was second and the Zone plaque winner. K9DX made a great score from the Midwest and landed in 4th place. It took 445K to just make the Top 10 score box from the USA.

K8ND manned the PJ2T super station to the world-high DX Single Operator score, just nosing out Martti at CU2A. Seven stations made at least 1-million points, and it took 916.5K to make the Top 10. WA4PGM keyed VP9I to the world-high low-power score, and we saw N0FW in the top 10 low power at position six. OM7DX moved into the world-high QRP spot this year, with Canadian VE3DO placing second.

W4TMR paced the USA QRP entries. There was a dramatic increase in QRP entries in 2006. That took bold operators to face top band with 5 watts!

VO2AC made a splash from rare Labrador as the world-high Multi-Operator entry. The operators were VE3FU and VO1AU. The MD4K crew topped Europe for second place, and it took over 1-million points to make the Multi Op Top 10.

N4PN, K4BAI, and N4GG joined W8JI to key the W8JI super station operating as W4AN in a tribute to the late Bill Fisher. The gang just missed 1-million points (11th world high) to place as the top USA Multi-Operator. The W4AN score was a new USA Multi-Operator record. We also note that KH6ND operating KH7X smashed the Pacific record score by 300K.

There were tight Single Operator races in New York, Oregon, Washington, Wisconsin, Colorado, Minnesota, Belarus, England, Netherlands, Sweden, and Indonesia. In some cases, one more multiplier made the difference!

Close multi-operator races included teams from Massachusetts, Kentucky, Michigan, Ohio, British Columbia, Germany, Italy, Lithuania, and the Netherlands (again).

Special DXpeditions and rare single ops included 4J5A, XU1ADI, BA4RF, BA4DW, ZC4LI, HS0ZDJ, UK9AA, OH0L, OY1CT, GU4YOX, GJ2A, J49W, YC0LOW, YB5AQB, and KG6DX. They added spice on CW. Kudos to rare CW Multi-Operator stations, including 4U1WB, VO2AC, CT3FN, 5B4AIA, MD4K, HB0/T94DX, and Z37M. The ZL6QH gang turned in one of the better New Zealand efforts in recent years.

Last, Dave K0DI, continues to turn up almost anywhere. He operated as portable KH6 on CW and portable KP4 on SSB. In the past he has operated from Georgia, California, Nebraska, and Rhode Island. Where next, Dave? How about Antarctica!

## SSB

The world-high Single Operator score was turned in by OH1RY operating EA8AH. He

### TOP 10 SCORES

#### SINGLE OPERATOR

USA CW		USA SSB	
N8T	776,424	K8V	384,705
W4MYA	653,499	K1LZ	223,744
W4ZV	617,463	N3HBX	221,195
K9DX	581,152	W3BGN	179,690
AA1K	553,707	KY5R	176,099
N2NT	512,533	N4PN	163,944
KD4D	484,205	W4MYA	160,381
WE3C	474,150	W3TS	151,940
NQ4I	458,469	KU1CW	144,072
N4AF	445,400	W3GH	142,121

#### VE (TOP 5)

CW		SSB	
VY2ZM	2,088,976	VA3YP	225,603
VE3EJ	993,375	VE3PN	156,816
VE3DZ	804,559	VE3MGY	151,670
VE3TA	765,624	VA3DX	107,880
VE2TZZ	600,490	VE3XN	102,872

#### QRP (TOP 5)

CW		SSB	
OM7DX	250,920	W4TMR	34,202
VE3DO	201,402	S57D	25,812
SP1GZF	174,804	VE6EX	25,536
SP6GCU	143,488	KC2NTB	22,860
OL4W	117,990	NK8Q	14,175

#### DX CW

#### DX SSB

PJ2T	1,303,965	EA8AH	504,450
CU2A	1,252,096	P40W	363,545
M2D	1,033,218	HG3M	347,440
7X0RY	1,028,610	KV4FZ	299,026
M5X	1,019,874	YT0A	282,450
EA6IB	1,009,953	SP3KEY	280,976
OK1RF	1,002,932	S57DX	239,470
MP4A	989,750	IZ4DPV	230,454
SN7Q	922,990	S50A	196,980
OH0L	916,596	OE9XRV	177,118

#### LOW POWER (TOP 6)

VP9I	373,230	VA3YP	225,603
4J5A	352,716	VE3MGY	151,670
OM3OM	345,861	DL1Z	138,159
VE3CSK	339,703	N0FW	112,910
J49W	332,670	SP5ZIM	88,322
N0FW	332,667		

#### W/VE QRP (TOP 3)

W4TMR	52,762
K9CS	45,628
W8VE	41,831

#### MULTI-OPERATOR

CW (WW)		SSB (WW)	
VO2AC	1,473,290	4L0G	451,306
MD4K	1,194,219	HG8DX	416,584
CT3TN	1,166,368	C6ANM	392,380
OM7M	1,143,680	RK2FWA	369,892
RK2FWA	1,135,022	TM9Z	309,285
ON4UN	1,093,432	S57M	295,464
HB0/T94DX	1,051,947	XE1RCS	287,448
IV3OWC	1,028,526	WE3C	253,276
HA3O	1,021,972	N2CW	248,216
5B4AIA	1,008,192	ND8DX	238,791
W4AN	977,932		

### 2006 PLAQUE WINNERS AND DONORS

#### SINGLE OPERATOR

##### CW

**WORLD BY W4ZV (DJ8WL MEMORIAL):** Winner Jeffrey T. Briggs, VY2ZM (K1ZM).  
**USA BY K4TEA:** Winner Yuri Blarovich, N8T (K3BU).  
**CANADA BY K8FC:** Winner John Sluymer, VE3EJ.  
**ZONE 3 BY N5IA:** Winner George A. Cutsogeorge, W2VJN.  
**ZONE 4 BY K4WA:** Winner John W. Battin, K9DX.  
**ZONE 5 BY N4PN:** Winner Robert S. Morris, W4MYA.  
**AFRICA BY WS9V:** Winner Pubal Frantisek, 7X0RY.  
**ASIA BY K4SX:** Winner Valentin Benzar, C4M (5B4AGM).  
**EUROPE BY K9DX:** Winner Martti Laine, CU2A (OH2BH).  
**RUSSIA BY RZ3AA:** Winner John Nalbandyan, RA6AX.  
**OCEANIA BY K9DX:** Winner Pacific Contest Club, KH7X (Operator KH6ND).  
**SOUTH AMERICA BY W4NU (W4UUH Memorial):** Winner Caribbean Contesting Consortium, PJ2T (Operator K8ND).  
**JAPAN BY W4ZV (JA1XAF Memorial):** Winner Masaki Okano, JH4UYB.  
**NORTH AMERICA BY CQ (N4IN Memorial):** Winner Pedro J. Piza, Jr., NP4A (Operator WP3C).

##### SSB

**WORLD BY N4NX:** Winner Pekka Kolehmainen, EA8AH (OH1RY).  
**USA BY K4JRB:** Winner Yuri Blarovich, K8V (K3BU).  
**CANADA BY TBA:** Winner Kasim-Raco Hirkic, VA3YP.  
**ZONE 3 BY N4TMW:** Winner Mitch Mason, K7RL.  
**ZONE 4 BY N4XMX:** Winner Tim Winger, KY5R.  
**ZONE 5 BY K1PX:** Winner Krassy Petkov, K1LZ.  
**AFRICA BY WB4ZNH:** Winner Pubal Frantisek, 7X0RY.  
**ASIA BY NT4TT/AH2BE:** Winner Henry Litvinov, UA9ACJ.  
**EUROPE BY WS9V:** Winner Vajda Istvan, HG3M (HA3MY).  
**OCEANIA BY D4B/4L5A:** Winner Pacific Contest Club, KH7X (Operator KH6ND).  
**SOUTH AMERICA BY D4B/4L5A:** Winner John Crovelli, P40W (W2GD).  
**NORTH AMERICA BY CQ (K2EEK Memorial):** Winner Herbert Schoenbohm, KV4FZ.

#### MULTI-OPERATOR

##### CW

**WORLD BY N4RJ:** Winner Christopher L. Allingham, VO2AC.  
**USA BY W8UVZ, W8CD, and K8GG:** Winner: South East Contest Club, W4AN.  
**Zone 3 by 4X4NJ:** Dixie DX and Contest Club, NM7D.

##### SSB

**WORLD BY SOUTHEASTERN DX CLUB:** Winner Radio Club and Contest Station, 4L0G.  
**USA BY WB9Z:** Winner John E. Rodgers, WE3C.  
**Zone 3 by 4X4NJ:** Winner Jacks Peak Amateur Radio Association, N7GP.



# ON4UN & ORION II



## John could own any transceiver he wants. His choice? A pair of ORION II's.

CQ Contest Hall of Fame member John Devoldere, ON4UN, literally wrote the book on DXing. "Low Band DXing" is now in its 4th edition after more than 20 years in print and is regarded worldwide as THE indispensable book for low band operating advice.

ON4UN was issued the first ever 5 band Worked All Zones award. His 353 countries confirmed on 80 meters, (#1 world total), and 299 more on 160 meters, (#1 outside the USA), and numerous contest records set over the last 40 years stand as a testament to his lifelong dedication to Amateur Radio.

ORION II receiver performance is simply the finest there is. Join ON4UN and many other DXers and contesters around the world by putting an Orion II in your shack. Call us today at (800) 833-7373 to place your order. **\$3995\*** or **\$4295\*** with automatic antenna tuner.

**Ask about our 4-month finance plan.**

1185 Dolly Parton Pkwy., Sevierville, TN 37862 **Sales: 800-833-7373** [www.tentec.com](http://www.tentec.com)

We accept Visa, MC, American Express and Discover. Office (865) 453-7172. FAX (865) 428-4483.

Sales: Mon-Fri 8:00-5:30 Eastern [sales@tentec.com](mailto:sales@tentec.com). Service: Mon-Fri 8:00-5:00 Eastern [service@tentec.com](mailto:service@tentec.com) (865) 428-0364.

\*Shipping is additional. TN residents add 9.5% sales tax

**TENTEC**

took advantage of reaching both Europe and North America to score 504.5K points. W2GD again used his P40W Aruba call for a solid second world high and South America plaque-winning score. Except for KV4FZ (North America winner and 4th place), the rest of the world Top 10 were Europeans.

Yuri, K3BU, again traveled to West Virginia and used another special call, K8V. Yuri was the USA winner by over 160K. Congratulations to Yuri for his dual USA win in 2006. K1LZ and N3HBX waged a tight battle for USA runner-up, with Krassy edging out N3HBX by 2.5K. It was good to see two Zone 4 stations, KY5R (Alabama) and KU1CW (Missouri), make the USA Top 10.

VA3YP was a double winner, topping both Canada and world-high low-power. N0FW topped the USA low-power entries and finished 4th world high. Chuck, W4TMR, had his many QRP efforts rewarded by easily winning the world-high QRP category. S57D was second, and the remaining three top five were all in North America (VE6EX, KV2NTB, and NK8Q).

We move to Georgia in Asia for the world-high Multi-Operator score at 4L0G. Taking advantage of the 10-point QSOs, they beat second-place HG8DX by nearly 35K. WE3C edged out last year's high USA Multi-Operator station N2CW by 5K. ND8DX was not far behind. The USA stations filled out the world Top 10 by placing 8th, 9th, and 10th. C6ANM set up virtually Field Day style



Dan, W8CAR, CW Single Op, High Power from Ohio.

and placed 3rd the top North America score.

Close Single Operator races on SSB included stations in Pennsylvania, Tennessee, Utah, Washington, Illinois, Colorado, Minnesota, England, Germany, and Sweden and Brazil (a tie). Close Multi-Operator races were noted in California, Ohio, Ontario, and Italy. Thanks to these rare or semi-rare single operator stations for adding spice to the SSB competition: HR2DMR, 7X0RY, 9K2HN, EX8AA, AP2IA, TA1CM, and ZP9/N3BNA. Good multi-operator multipliers included 4L0G, YM7M, and YE1ZQT.

We need a little propagation magic in 2007 to pick up the SSB section. Over the past few

years, QRN and bad propagation have dampened the SSB weekend. However, as AA1K did note in the QRM, SSB contestants went up to the top of the band. Please try to avoid any nets above 1890 and don't get into arguments with rag chewers. Let's keep 160 the "gentleman's band."

## Clubs

The Bavarian Contest Club ran away with the top club score with nearly 16.5 million points. The top USA club was the ever-present Potomac Valley Radio Club with 10.4 million points. Twenty-seven clubs scored more than 1-million points this year. In fact, it took almost 4-million points to make the Top 10. How do the top clubs get to where they are? They get virtually everyone to turn out, no matter what their score. The top clubs usually have a contest manager who makes sure the scores are in and sometimes even corrects the logs of a station or two.. Suppose your club had ten stations turn out last year then got 15 to turn in scores this year. Each additional log increases the club's score. It's amazing how small increases can move up your club several positions! You say your club is not on the list, but you know a station or two put the club in the club box. Well, make sure that there were at least three entries. The UA2 Contest Club is famous for the most score for the fewest entries. Can you top that club? The club

## CLUB SCORES

(Minimum of 3 three entries required for listing)

CLUB	SCORE	CLUB	SCORE
BAVARIAN CONTEST CLUB	16,460,504	SW OHIO DX ASSO	651,479
POTOMAC VALLEY RADIO CLUB	10,389,232	SO CALIFORNIA CONTEST CLUB	601,403
YANKEE CLIPPER CONTEST CLUB	8,562,729	CENTRAL ARIZONA DX ASSO	598,295
FRANKFORT RADIO CLUB	8,338,265	MOSCOW CONTEST CLUB	598,239
RHINE-RHUR DX ASSO	7,077,820	KANSAS CITY DX CLUB	529,176
CONTEST CLUB ONTARIO	6,870,750	SPOKANE DX ASSO	503,760
SLOVENIAN CONTEST CLUB	5,266,545	URAL CONTEST CLUB	501,278
CONTEST CLUB FINLAND	4,774,240	NORTH COAST CONTESTERS	480,435
MAD RIVER RADIO CLUB	4,597,243	VERON (BELGIUM)	473,426
SOCIETY OF MIDWEST CONTESTERS	3,906,451	CAROLINA DX ASSOCIATION	461,106
SOUTH EAST CONTEST CLUB	3,369,880	WILLAMETTE VALLEY DX CLUB	383,094
KTU RADIO CLUB (LY)	2,823,228	SOUTH JERSEY DX ASSO	374,421
WORLD WIDE YOUNG CONTESTERS	2,422,286	WESTERN WASHINGTON DX CLUB	334,392
SP DX CLUB	2,393,660	KENTUCKY CONTEST GROUP	330,811
UA2 CONTEST CLUB	2,299,707	BAY AREA WIRELESS ASSO	308,610
UKRAINE CONTEST CLUB	2,147,240	MEDINA 2 METER GROUP	307,932
TENNESSEE CONTEST GROUP	1,800,073	GRAND MESA CONTESTERS	301,396
NO CALIFORNIA CONTEST CLUB	1,578,845	SOUTHEASTERN DX CLUB	294,726
FLORIDA CONTEST GROUP	1,541,329	KIEV CONTEST GROUP	281,381
EAST COAST CANADA CONTEST CLUB	1,535,302	NH ME VT CW CONTEST CLUB	269,727
MINNESOTA WIRELESS ASSN	1,432,567	OKLAHOMA DX ASSO	233,859
CHILDREN DX CLUB (UK)	1,400,048	UTAH DX ASSO	232,972
LATVIAN CONTEST CLUB	1,395,395	ARAUCARIA DX GROUP	200,894
HUDSON VALLEY CONTESTERS AND DXERS	1,367,697	LITHUANIAN CONTEST CLUB	198,733
LIMA ALPHA CONTEST CLUB (LA)	1,255,222	WEST PARK RADIO OPERATORS	186,712
CROATIAN CONTEST CLUB	1,181,811	SRR (RUSSIA)	164,449
SKY CONTEST CLUB	1,140,779	NO ARIZONA DX ASSO	132,855
TARTU CONTEST TEAM	1,068,448	ROCHESTER DX ASSO	110,432
DARC	998,544	ORDER OF BOILED OWLS OF NY	108,667
CRIMEA CONTEST CLUB	981,755	YU CONTEST CLUB	104,358
NORTH TEXAS CONTEST CLUB	972,700	ALBERTA CLIPPERS	104,320
HADXC (HUNGARY)	852,490	TEXAS DX ASSO	98,274
VRHNIKA CONTEST CLUB	832,654	KYIV (UKRAINE)	95,654
LOWLAND CRAZY CONTESTERS (PA)	765,570	MARCONI CONTEST CLUB	91,557
READING AND DISTRICT ARC (UK)	734,508	CT RI CONTEST CLUB	76,129
LOW COUNTRY COMEST CLUB (SC)	721,139	CENTRAL SIBERIA DX CLUB	47,027
RUSSIAN CONTEST CLUB	707,958	MOTHERLODE DX/CONTEST CLUB	36,209
BRITISH COLUMBIA DX CLUB	671,362	METRO DX CLUB	20,938

# Take Control of Your Transmit and Receive Audio!

Instantly Switch Transmit and Receive Audio Among Multiple Radios

## Improve Your Contest Scores!

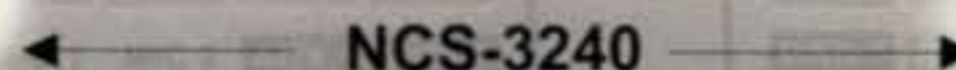
"ALL AT THE PUSH OF A BUTTON"



NCS-3203



NCS-3230



NCS-3240

Visit our web site for more detailed info

HOLIDAY SPECIAL

HOLIDAY SPECIAL

### NCS-3240 Multi-Switcher

- Switch 4 Audio Sources Between 4 Radios
- Switch Seamlessly Between Voice, CW and Digital Modes
- Matches Any Mic or Audio Source to Any Radio
- Switches External Speakers or Headset to Selected Radio

~~\$299.95~~ Now **\$279.95**

### NCS-3203 Multi-Rx II

- Monitor Up to 4 Radios simultaneously
- Provides Selected & Unselected Audio to Separate Speakers
- Separate Volume Controls for Selected & Unselected Audio
- Automatic Control Using the NCS-3240 or Use Standalone

~~\$249.95~~ Now **\$239.95**

### NCS-3230 Multi-Rx

- Control Receive Audio of up to 6 Radios
- Manual or VOX Recorder Control
- Busy Lights for each Radio
- Normal & Spatial Listening Modes

~~\$349.95~~ Now **\$329.95**

**See Our Web Site for Special Package Pricing - Offer Good Through December 31, 2006**



## New Communications Solutions, LLC

Toll Free Tel: (888) 883-5788

www.ncsradio.com Email: ncsradio@ncsradio.com

competition is a "for fun" competition with no trophies or certificates awarded. However, you can bet it's a serious activity within the CQ WW 160 contests. Pride and prestige are at stake. Remember that a club can leverage a DXpedition, and you can split the score between clubs. Just tell us how you want it split!

### Certificates and Trophies

Every so often, the rules for trophies and certificates are changed to meet conditions. Only one plaque per section is awarded per entrant. The runner-up gets a plaque for a country or continent. No plaque is awarded for a score of less than 30K. Minimums for Low Power and QRP category certificates are 5K for Low Power and 1K for QRP. Exceptions are made by CQ 160 Committee decision (Japan Low Power, for instance). The CQ 160 Contest Committee or the Contest Director can decide to not award a certificate if enough effort is not shown (usually a very low score). A runner-up in either a state, province, or country can be awarded a second-place certificate if there are eight or more entries and the score is 100K or more. Please have patience, as volunteers handle all plaques and certificates.

### Helpers

Thanks to Eddie, W6/G0AZT; Jim, AD1C; Dave K8CC; and Bob, W5OV, for their help with the logs. Dave, KM3T, ran the robot



Yuri (K3BU) used the W8LRL super 160 station to operate N8T on CW and K8V on SSB. He was high USA on both modes.

again this year and helped solve Cabrillo problems. My wife Jean assisted with Microsoft issues and assisted in getting the results to CQ. Thank you to CQ Managing Editor Gail, K2RED, for coordinating all of the material and making it ready for publication. Also, thanks to everyone for the logs.

The 2006 CQ WW 160 Meter Contest is dedicated to Larry Lindblom, W0ETC, and all the recent Silent Keys.

### The 2007 Contests

The dates for the 2007 CQ WW 160 Contests are set. CW will be January 27-28. The SSB section will be February 24-25, 2007. The contests run from 0000Z the first date to 2359Z the second date. Logs can be

# The ULTIMATE FCC LICENSE

## GET YOUR FCC COMMERCIAL LICENSE!

The Original FCC Tests-Answers exam manual - newly revised 19th edition - prepares you for the highest class FCC commercial license:

- FCC General Radiotelephone Operator License (GROL) and Radar Endorsement
- Marine Radio Operator Permit

You get all multiple-choice questions & answers for FCC elements 1, 3 & 8 - everything you need to know to get your FCC License. Plus, helpful study tips and short cuts.

### MAIL THIS COUPON TODAY

OR, CALL TOLL FREE **800-932-4268**

to order the newly revised FCC TESTS-ANSWERS Guide

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_

Enclosed is \$29.45 (\$24.95 + \$4.50 S&H) or Call to order with VISA/MasterCard/AmEx

**COMMAND PRODUCTIONS • FCC License Training**  
PO Box 3000 • Sausalito, CA 94966-3000

submitted as hand logs to CQ or in Cabrillo format via e-mail. You may also submit electronic logs on diskette (3.5 inch, please). We must hold everyone to our required deadlines for log submission of February 28, 2007 for CW or March 31, 2007 for SSB. Please clearly mark envelopes for hand logs as SSB or CW. *Computer-generated hand logs must include a diskette to be considered.* Snail-mail logs must bear a postmark no later than the deadline for consideration. Send all hand logs to CQ 160 Meter Contest, 25 Newbridge Road, Hicksville, NY 11801.

For the 2007 contests, electronic CW e-logs go to <160cw@kkn.net> and SSB e-logs go to <160ssb@kkn.net>. Remember to put your callsign in the subject line of the e-mail. The call is put into the master database to make sure it matches the call of the entry. Name the log call.log (K4JRB.LOG, for example).

See you all in the 2007 160 Meter contests! 73, Dave, K4JRB

## W/VE CW QRM

It's amazing what can be done with 5 watts ... **K0PK**. Never heard the East Coast with my modest antenna ... **W0RMA**. The number and strength of signals reminds me of 10 meters at the other end of the sunspot cycle ... **WB0**. First Hawaii on 160. What a thrill ... **K1BV**. Still stuck on 49 states, as no KL7 again. ... **N2FY**. G5RV through a tuner is mostly a cloud warmer but still had great fun ... **W2OB**. First contest in 35 years. Lots of DX did not hear me. Will have a better antenna next year ... **W2RR (Op. WA2AOG)**. A fun contest. With my little Drake T4X and 40 meter Vee even worked some DX ... **AA3I**. Rusty on CW so only answered CQs ... **WA3FWA**. Sunday evening was best for DX. Even got a new one (T9) in the contest this year ... **N4MM**. K4OGG in Georgia was awful popular, as at least a dozen stations I worked came back with his call ... **W4OGG**. Great conditions and all my antenna work over the summer paid off, as I had my best score ever ... **W4TMR**. QSOed CU2A for number 111 top band mobile ... **KH6DX/Mobile**. Just working UA0DC made it worth it ... **N6HY**.

My 53rd year of contesting as W6PLH, K2DGT, and now W6PU ... **W6PU**. The band was wall to wall with great operators ... **W7HS**. Let's do away with RST and use first year of license for a meaningful exchange ... **W8IM**. Log submitted in memory of W9WUU ... **W9GXR**. Worked 50 states and DC plus 12 countries. Just need a better DX antenna ... **WA9TZE**. PJ2T was my best DX ... **VE3CRU**. I am amazed at 160 being open at mid day ... **AC9S**. A good antenna nearly quadrupled the score ... **AE7DX**. Worked several Japanese stations at morning greyline. My new dipole at 85 feet seems to work well ... **AF7Y**. Hope the new states I worked will upload their logs to Logbook of The World ... **K0HW**. Enjoyed the elusive 160 spotlight here in Ohio for the last two hours of the contest ... **K1LT**. Ran 5 watts, 100 watts, and 1.5 KW in my first big effort on 160 ... **K2TA**. Saturday night I got my first real taste of 160 DX ... **K3STX**. Thrilled to make my first West Coast contact with 5 watts ... **K3TW**. Worked F5IN 45 minutes before sunset on Sunday evening ... **K5BG**.

Worked 81 Europeans despite line noise from the northeast direction, which is usually a quiet direction ... **K5RX**. My personal best 160 score with 73 JA's worked along with 15 countries. Nothing from the main of Europe, however ... **K6NR**. Where did South America go? Only worked PJ2T ... **N4WW**. Used a 330 foot balloon vertical this time. No QRM in the desert ... **NF6V**. Worked Steve, W7QC, on my dummy load ... **NW7DX**. Increased activity made this contest enjoyable ... **VY2ZM**. Highlight was working KH7X with 5 watts and a 3/8-wavelength inverted L ... **W8VE**. Thanks to K6IDX for allowing us to operate at his QTH ... **W6OAT**. Conditions were the best ever seen on 160. After 4.5 hours over 350 QSOs had been logged. I even logged two European contacts, a first for me. Next season I need a low-noise receive antenna. This contest was a blast ... **K7RE** (South Dakota!). Used a balloon vertical in the bad lands near Imperial Dam, California. This is about as far east in California as you can get. Boy is it quiet there on receive. ... **KB7Q**. Was surprised to work 44 states. Hope I gave Vermont to a few ... **W1ECH**. Local storm QRM kept my score down ... **K9FO**. Because of a business trip I could only work Saturday night ... **K0KT**. Good conditions both nights. But for some reason my score was down from the past two years. Worked WAS the first night but missed VE4, VE8, and VY1 ... **AA1K**.

## DX CW QRM

We suffered from a constant powerline noise that was close to our antenna. We could not dig out the weak ones due to this. We will be back next year with an improved station ... **CT3FN**. Another great contest. Low point was falling asleep the first night. Highlight was working N7FU in Colorado well before his sunset. See everyone next year ... **GU4YOX**. Great to be here for another "Top" battle. Still need to improve the receive capability. CU next year. ... **PI4COM**. Worst conditions for me in years. Fed up with my non-existent rate I packed it in and went to bed ... **V25G (Op. G4RCG)**. Thanks for all the QSOs. I hope to better compete on 160 very soon. I only have 80 watts and a shunt-fed 40 foot tower ... **XE1GRR**. Our 160 regulations have changed in Germany. Restrictions for contests are 1810 to 1850. So I tried following restrictions and 150 watts. I noticed many DL's operating illegally above 1850 ... **DL9YX**. I moved to a hilltop QTH in Saitama for the contest. I then installed

a vertical L which worked well for receive but not too good on transmit with only 50 watts. But I really enjoyed my first 160 contest ... **JE1CKA**. Conditions from 12 degrees north of the equator are always challenging on top band with noise always present. Thanks to all who worked me. Apologies to all who were unable to reach me, and what's wrong with the rest of you? ... **PJ2T (K8ND)**. I used a micro antenna only 3.6 meters in length. But performance is almost equal to a dipole. Hard to make a good score from Japan as I hear only US West Coast, Pacific, and Asia ... **JE1SPY**. Improved our score by 10%. Key clicks from signals made it tough to copy weaker stations ... **YT0A**. Well, are there any conditions at all from Southeast Asia? ... **XU1ADI (Op. SM5GMZ)**. Don't know which is more difficult, working stations or getting the contest logger to work ... **UR3LPM**. Only worked continentals ... **ON5JD**. You must run high power to have a good score. 25 watts does not cut it ... **OM3BA**. Really helpful to have more Beverages this year ... **OK1RF**. We put up another Beverage to the west, which really paid off ... **MD4K**. Glad to work two VE's with my 10 watts ... **M3CVN**. Antenna was poor but Super Duper logger was great ... **M0AJT**. Good operators, good conditions ... **EI6IZ**. Could not get the antenna to match through the tuner so ran only 20 watts. Had fun anyway. ... **DP7A**.

## W/VE SSB QRM

After awhile I thought my callsign was "try again." What fun anyway ... **K0SRL**. Went over my last year's score by a large amount ... **KB0ARZ**. QRP is a challenge ... **W0MTW**. I run into many of the same operators in the VHF contests. I do need to raise my dipole or build a vertical for DX, and construct a beverage for receive ... **AF1T**. Would have loved to work that guy from Montana but now wish I had the hour back I used calling him. Only the second time I operated 160 since I got my ticket in 1990 ... **N1NFG**. Finally working Alaska ... **KR4BD**. My first 160 contest since the 1970s. Boy have things changed ... **W4JYV**. I had a great time the first night but QRM the second night kept my score down. New receiving setup helped to find holes in the band and even run stations at times with my QRP ... **W4TMR**. This was the first time for my 3-500 amp on 160. The variable cap would arc on voice peaks. This required adjusting the plate supply to cut the power to stop the arc ... **WA5FRF**. Just put up my loop and contacted KL7RA. This was my first contest on 160 ... **WA7NTU**. Not as many VE's this time. Worked all states and DC on both SSB and CW this year. Now to get the QSL cards ... **WA9TZE**. Another part-time effort from the camper ... **KD0**. Equipment failure right out the gate. Unable to use the F keys and .wav voice files ... **K7OX**. Did not have time to actively participate but was surprised at how well 100 watts made QSOs ... **K5PTC**. Poor conditions made QRP more of a challenge ... **K3TW**. Found clear spots at 1990 and 1995 kHz to make a few QSOs ... **AA1K**. Wall to wall strong signals. The new 3-element Yagi (*what?—ed.*) seemed to do well into Europe and heard better than the beverages ... **N3HBX**. Enjoyed the contest even with antenna problems on Sunday. Can't wait til next year ... **N4SEA**. Heavy QRM the first night and poor propagation the second ... **N7GP**. Friday night no QRM but no DX propagation ... **N8IE**. Twelve-year-old KE7FXF was probably the youngest ham to operate the contest. He had about 4 hours sleep each night ... **NF7E**. Operated from the W2WHP contest station located at a Boy Scout camp on Staten Island, New York ... **NN2W**. Score was down this year due in part to the camaraderie between old and new members. The 160 Delta Loop had a good tryout. Will be back next year to work more stations ... **VE3DC**. Conditions were much worse than the CW section in January. Lack of JA SSB privileges makes this a painful event on the West Coast ... **WA7LT**. I got on to test a voice keyer and started a run ... **W1JQ**. Finally a computer log ... **W3TS**. Conditions good Friday but slow on Saturday and Sunday ... **W4PV**. Had a bad case of bronchitis so only made a few contacts ... **K8NWD**. Only had one Beverage. Sorry to the West Coast stations we could not hear ... **K5ZG**.

## DX SSB QRM

With a brand new 4-square antenna we had a nice contest. Conditions were good the first night but only so so the next ... **TM7Z**. We built our operating site on the beach on Eleuthera Island. Great conditions before the contest on Wednesday and Thursday but only fair on Friday. QRM forced us to quit early on Sunday morning. We held pile-ups in Europe and North America. Could have broken 1000 Q's if the RX antenna had worked better and no generator noise ... **C6ANM**. Took my son to a carnival then found that my power supply failed ... **SV1GRD**. Ran a Field Day type operation with a dipole strung over a 100 foot pine tree ... **ZP9/N3BNA**. Great day to operate with very bad weather outside ... **HB9LC**. Used a GP antenna with a height of 204 meters ... **4L8G**. Operated on temporary status in Pakistan. Also ST2T/S57CQ ... **AP2IA**. Special receive antennas were superb and helped make a lot of extra Q's ... **G3UEG**. Too many stations had loud transmit but could not hear ... **DL7UMK**. Limitations in band coverage and power made operating hard in Germany ... **DJ1AA**. Interesting how many stations could be contacted on 160 ... **DK2ZJ**. My first time using Beverages for receive which helped a lot ... **OE9XRV**. Using a 80 meter dipole as an antenna is not a good idea. Next time with a 160 up ... **S57S**. Our eleventh year to participate ... **XE1RCS**.

(Continued on page 103)

**Special Holiday Discounts Off Our Already Low Prices!**



# HAM RADIO OUTLET

WORLDWIDE DISTRIBUTION



## DISCOVER THE ICOM D-STAR REPEATER SYSTEM

### ID-RP2C Repeater controller

The cornerstone of the D-STAR repeater system. Handles up to four RF modules. Basic in-band or crossband operation. Linking capabilities through the internet and future 10GHz backbone products.

### ID-RP2D 23cm digital data module

Access point with a data rate of 128kbps. Depending on the system setup, set up an email and/or file server for EmComm support. Perfect for web applications or support via internet connection.



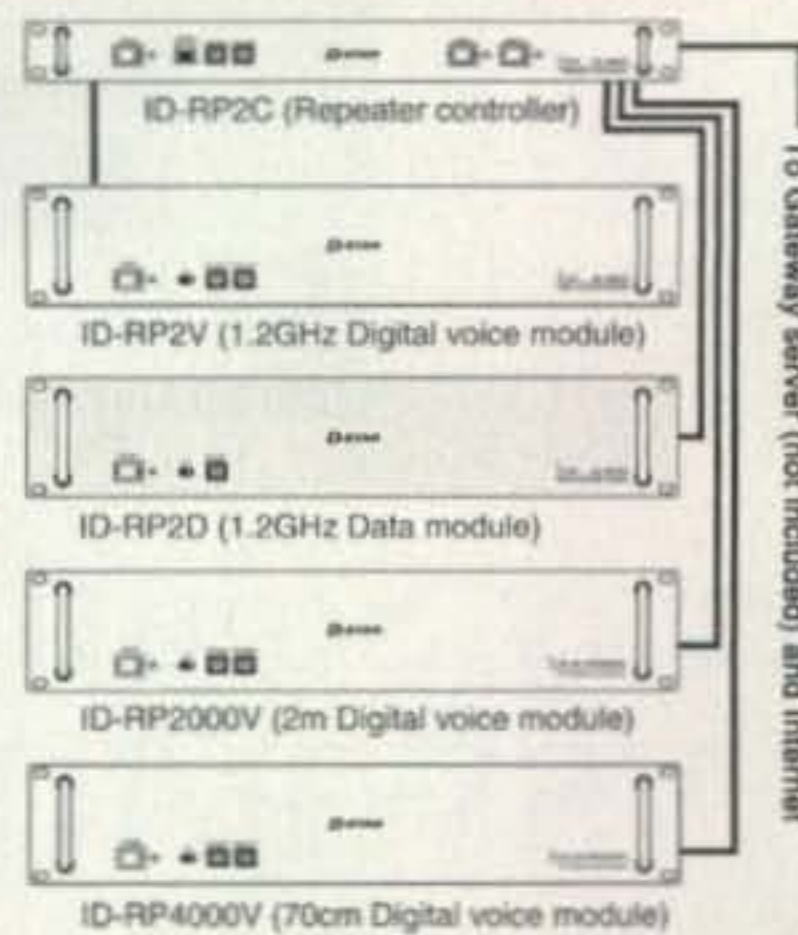
### ID-RP2V 23cm digital voice module

### ID-RP4000V 70cm repeater module

### ID-RP2000V 2m repeater module

Finally, commercially available crossband repeaters! With proper callsign programming in any D-STAR compatible mobile or portable, the Icom D-STAR repeaters will automatically route your signal to any other RF module connected to a common RP2. With simple repeater commands, you can direct your communications through any of the RF modules or across the world via the gateway.

**DIGITAL**



Up to 4 modules can be connected to 1 ID-RP2C

## DISCOVER ICOM WIDEBAND RECEIVERS

### IC-R3 TFT Display Receiver

- 0.5-815.995 MHz & 902-2450 MHz
- AM, FM wide, FM narrow, TV • 450 Alphanumeric memory channels • Telescoping BNC antenna • Li-ion battery and charger



### IC-R5 Compact Handheld Receiver

- 0.150-1309.995 MHz\* • 1200 Alphanumeric memories • Callsign Squelch • CTCSS & DTCS Encode/Decode w/ tone scan • Only 3.5 inches tall (without antenna)



### IC-R20 Advanced Receiver

- 0.150 - 3304.999 MHz\* • FM, WFM AM, USB, LSB, CW • 1250 Alphanumeric memories • Digital recorder, up to 4 hours • 6 Scan types • Band scope • Li-ion battery and charger • Much more!



### IC-R75 HF + 6M Base Receiver

- 03 - 60MHz • AM, S-AM, FM, USB, LSB, CW, RTTY • 99 Alphanumeric memories • Factory Installed DSP (UT-106) • Synchronous AM detection (S-AM) • Triple conversion • Twin passband tuning • Noise blanker • 24 Hour clock timer • Front-firing speaker • Selectable AGC



### IC-PCR1500 PC "Black Box" Receiver

- 0.01 - 3300 MHz\* • AM, FM, WFM, SSB, CW • "Unlimited" memory channels • Multiple PC operating screens to choose from • Simple USB connection • Record and save .WAV files • Windows® software • Also available: IC-PCR2500, with dual receivers, dual watch software and optional D-STAR, optional P25



### IC-R1500/IC-R2500 Receivers

- Remote control head plugs into "black box" • Shares most specs with IC-PCR1500 • Also available as IC-R2500, which shares most of same specs with IC-PCR2500



\*Cellular blocked, unblocked OK to FCC approved users. • Limited time only. Check with HRO for details or restrictions on any offers or promotions. © 2006 Icom America Inc. QST DEC 06. The Icom logo is a registered trademark of Icom Inc. 8926



**ANAHEIM, CA**  
(Near Disneyland)  
933 N. Euclid St., 92801  
(714) 533-7373  
**(800) 854-6046**  
Janet, KL7MF, Mgr.  
anaheim@hamradio.com

**BURBANK, CA**  
1525 W. Magnolia Bl., 91506  
(818) 842-1786  
**(800) 854-6046**  
Eric, KAGIHT, Mgr.  
Magnolia between  
S. Victory & Buena Vista  
burbank@hamradio.com

**OAKLAND, CA**  
2210 Livingston St., 94606  
(510) 534-5757  
**(800) 854-6046**  
Mark, W17YN, Mgr.  
I-880 at 23rd Ave. ramp  
oakland@hamradio.com

**SAN DIEGO, CA**  
5375 Kearny Villa Rd., 92123  
(858) 560-4900  
**(800) 854-6046**  
Tom, KM6K, Mgr.  
Hwy. 163 & Claremont Mesa  
sandiego@hamradio.com

**SUNNYVALE, CA**  
510 Lawrence Exp. #102  
94085  
(408) 736-9496  
**(800) 854-6046**  
Dan, K6DN, Co-Mgr.  
Howard, W6HOC, Co-Mgr.  
So. from Hwy. 101  
sunnyvale@hamradio.com

**NEW CASTLE, DE**  
(Near Philadelphia)  
1509 N. Dupont Hwy., 19720  
(302) 322-7092  
**(800) 644-4476**  
Rick, K3TL, Mgr.  
RT.13 1/4 mi., So. I-295  
delaware@hamradio.com

**PORTLAND, OR**  
11705 S.W. Pacific Hwy.  
97223  
(503) 598-0555  
**(800) 854-6046**  
Leon, W7AD, Mgr.  
Tigard-99W exit  
from Hwy. 5 & 217  
portland@hamradio.com

**DENVER, CO**  
8400 E. Iliff Ave. #9, 80231  
(303) 745-7373  
**(800) 444-9476**  
John N5EHP, Mgr.  
denver@hamradio.com

**PHOENIX, AZ**  
1939 W. Dunlap Ave., 85021  
(602) 242-3515  
**(800) 444-9476**  
Gary, N7GJ, Mgr.  
1 mi. east of I-17  
phoenix@hamradio.com

**ATLANTA, GA**  
6071 Buford Hwy., 30340  
(770) 263-0700  
**(800) 444-7927**  
Mark, KJ4VO, Mgr.  
Doraville, 1 mi. no. of I-285  
atlanta@hamradio.com

**WOODBRIDGE, VA**  
(Near Washington D.C.)  
14803 Build America Dr.  
22191  
(703) 643-1063  
**(800) 444-4799**  
Steve, W4SHG, Mgr.  
Exit 161, I-95, So. to US 1  
virginia@hamradio.com

**SALEM, NH**  
(Near Boston)  
224 N. Broadway, 03079  
(603) 898-3750  
**(800) 444-0047**  
Chuck, N1UC, Mgr.  
Exit 1, I-93,  
28 mi. No. of Boston  
salem@hamradio.com

## CALL TOLL FREE

Phone Hours: 9:30 AM - 5:30 PM  
Store Hours: 10:00 AM - 5:30 PM  
Closed Sun.

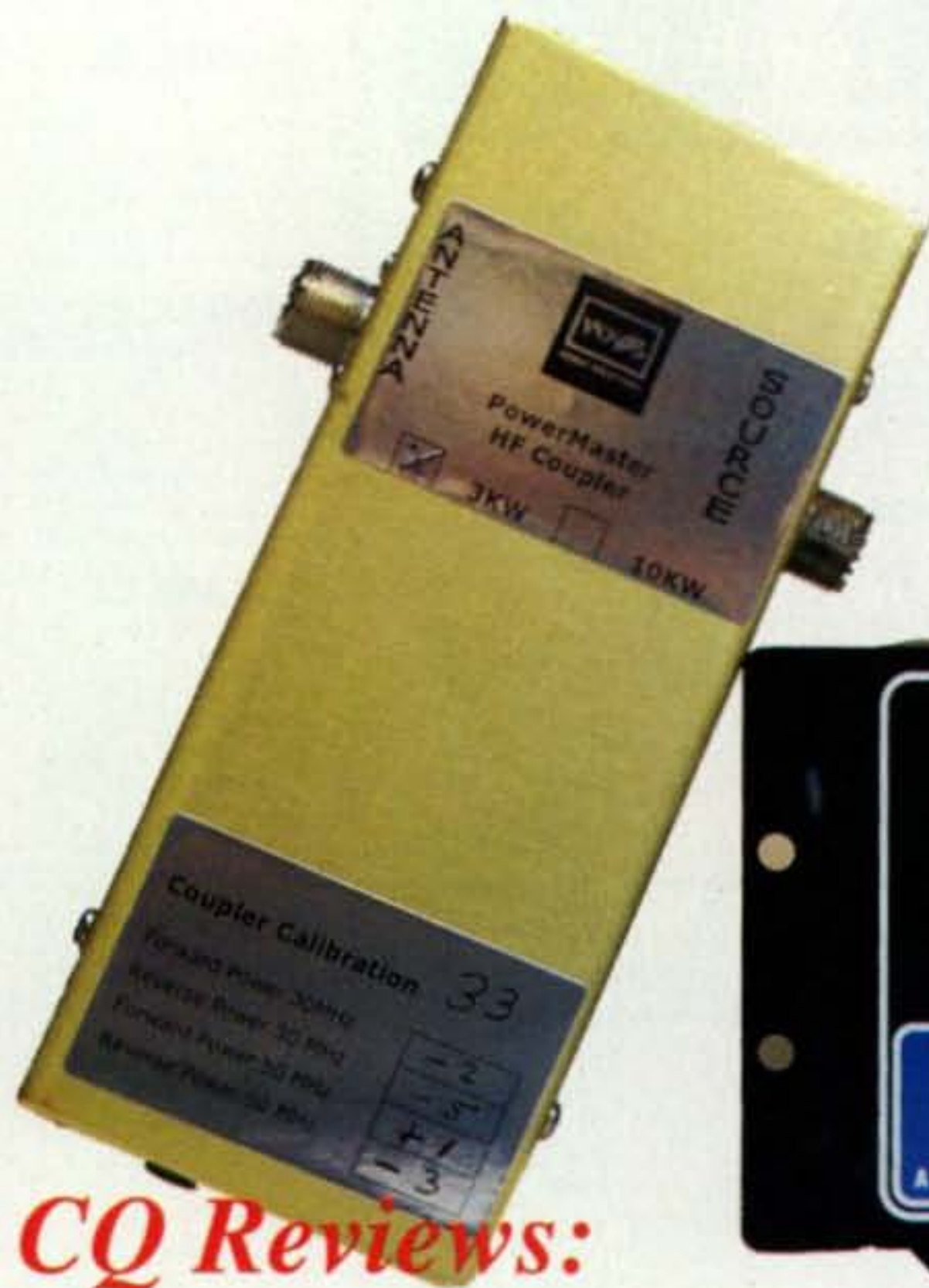
Toll free, incl. Hawaii, Alaska, Canada; call routed to nearest store; all HRO 800-lines can assist you; if the first line you call is busy, you may call another.

West.....800-854-6046  
Mountain.....800-444-9476  
Southeast.....800-444-7927  
Mid-Atlantic...800-444-4799  
Northeast.....800-644-4476  
New England..800-444-0047

Look for the  
HRO Home Page  
on the  
World Wide Web

<http://www.hamradio.com>

AZ, CA, CO, GA,  
VA residents add  
sales tax. Prices,  
specifications,  
descriptions,  
subject to change  
without notice.



One of the most common and most often-used accessories in the ham shack is the VSWR/RF power meter. Unfortunately, many hams rely on inexpensive meters for indications of what is really going on in their stations. But are those readings really accurate? AD5X looks at a meter whose accuracy he can vouch for (he watched it being calibrated!).



**CQ Reviews:**

## Array Solutions PowerMaster VSWR/RF Power Meter

BY PHIL SALAS,\* AD5X

**H**ow accurate is your power meter? The SWR side of most SWR/power meters is generally pretty accurate, as the reading is computed from differences between the forward and reflected power, which can be relative power levels. However, for making transmit power measurements, you do need an accurate indication. How accurate is your power meter? What was it calibrated against, and what was the accuracy of the test equipment? How stable is the power-level calibration after manufacturing adjustments have been made? All of these uncertainties have been resolved by Array Solutions with its PowerMaster VSWR/RF Power Meter (photo A, above).

### The PowerMaster Design

The PowerMaster accurately displays VSWR and RF power from 1–3005 watts in 1-watt steps. It consists of two separate units: a processor-controlled display unit, and an external 160–6 meter coupling unit (photo B). Array Solutions also makes couplers for the VHF and UHF ranges, and both a 3-kW model and a 10-kW coupler. This review will focus on the basic 3-kW 160–6 meter coupler.

In order to achieve high accuracy, company owner Jay Terleski, WX0B, chose a tandem-coupled dual-transformer directional coupler design which has a very tight coupling factor variation from 160–6 meters as well as a directivity of 25 dB or greater over this entire range.

Most HF power meters on the market typically require that two potentiometers and one or two trimmer capacitors be adjusted

during the calibration process. Generally, more adjustments mean you introduce more uncertainty into the calibration. There is also the possibility of variable component drift with time, temperature, and humidity. However, there are *no* adjustments necessary in the PowerMaster calibration process due to the minimal frequency response and coupling factor variations from unit to unit. Differences really occur only due to manufacturing lot variations in the toroids used. Therefore, Jay's team measures the variation from the coupler under test to a precision-calibrated HP-436A/attenuator setup that has a calibration uncertainty of  $\pm 1.5\%$ . The measured variation, or "Trim Factor," is recorded on each coupler for both the HF frequency range and 6 meters. This trim factor is then entered into the PowerMaster display unit when it is first powered up.

Array Solutions also did a great job in temperature compensating the coupler. Jay demonstrated this by directing a heat-gun across both a PowerMaster coupler and a popular and expensive in-line wattmeter. There was no observable change in the PowerMaster reading, whereas the other wattmeter displayed about a 10% change while I watched.

### Using the PowerMaster

Normally, you will want to measure power right at your transmitter output or the immediate output of your amplifier, if you have one. Since the coupler and display are separate units, both can be optimally positioned in your station. The PowerMaster comes with a 6-foot cable, but much longer separation distances between the coupler and display unit can be accommodated. If you want more separation, you'll need to provide your own shielded stereo cable with  $\frac{1}{4}$ -inch stereo phone plugs on each end. In my case, both the coupler and display unit mount nice-

\*Contributing Editor, CQ, 1517 Creekside Drive, Richardson, TX 75081  
e-mail: <ad5x@cq-amateur-radio.com>



# Learn with the Best – Gordon West & W5YI!

Amateur & Commercial study manuals, audio courses, software & more



## Technician Class

Get into ham radio the right way – studying with Gordo! His new *Technician Class* book reorganizes the Q&A into logical topic groups for easier learning. His audio theory course brings ham radio to life and is a great study companion to his book. W5YI software includes Gordo's answer explanations from the book, making learning easy and fun!

- Technician Class 2006-10 book includes bonus CD **GWTM \$18.95**
- Technician audio theory course on 4 audio CDs **GWTW \$27.95**
- Tech book + software package **NCS \$44.95**

## Tech + General Value Package

Technician & General Class books + W5YI software package. Includes 2 Gordon West study manuals, W5YI Morse code software & free Part 97 book. **TPG \$64.95**

## W5YI Ham Operator Software

Includes all written and code exams, plus W5YI CW software on a CD-ROM, with free Part 97 booklet.

- HOS (no books) **\$39.95**
- HOSB (with 3 study manuals) **\$84.95**



## General Class

Upgrade to the HF bands by earning your General Class ticket. Gordo's *NEW* book includes all the Q&A along with his fun explanations that make learning easy. His audio course is a great way to learn if you spend a lot of time in your car or truck. The W5YI interactive study software gets you ready for the exam – and to get on the HF bands!

- General Class book **GWGM \$17.95**
- General Class audio theory course on 4 audio CDs **GWGW \$27.95**
- Book + software package **GUS \$39.95**

## Learn Morse code for your upgrade to General!

- Morse code Learning Course on 8 audio CDs **GW05 \$39.95**
- CW Teacher on 2 audio CDs **GWCT \$14.95**
- Code software 0-48 wpm **WMC \$19.95**
- Morse code 5-16 wpm - tape **GW13 \$29.95**
- Morse code 13-20 wpm - tape **GW20 \$29.95**

## Get your commercial license!

- GROL-Plus book — FCC Elements 1, 3 & 8 for MROP, GROL, & radar **GROL \$39.95**
- GROL-Plus book + software **GRSP \$69.95**



## Extra Class

Let Gordo help you get your top ham ticket, Amateur Extra Class! His book includes memorable answer explanations to help you learn the material and understand the correct answer. His audio theory course reinforces learning. The W5YI software helps you prepare for that tough Element 4 exam.

- Extra Class book **GWEM \$19.95**
- Extra Class audio theory course on 7 audio CDs **GWEW \$39.95**
- Extra book + software pkg. **ECS \$39.95**

## Basic books teach you Electronics!

- Basic Electronics **BELC \$19.95**
- Basic Digital Electronics **BDIG \$19.95**
- Basic Communications Elect. **BCOM \$19.95**

## Getting Started in Electronics

by Forrest M. Mims



A great introduction for anyone who wants to learn electronics fundamentals. Includes 100 projects you can build, and great experiments that demonstrate how electricity works! **GSTD \$19.95**

Order today from W5YI: 800-669-9594 or on-line: [www.w5yi.org](http://www.w5yi.org)

The W5YI Group • P.O. Box 565101 • Dallas, TX 75356 *Mention this ad for a FREE gift!*

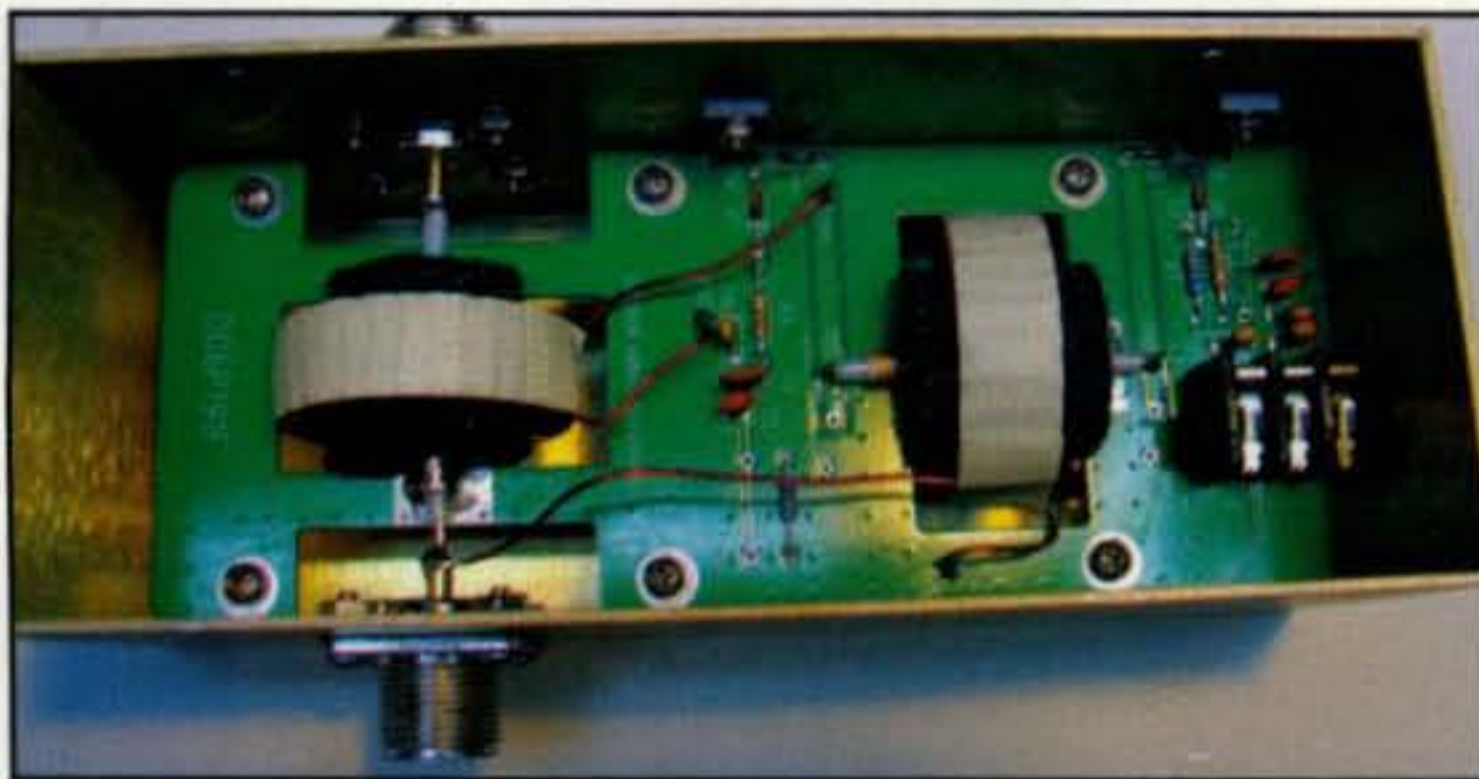


Photo B— The Array Solutions HF/6-meter 3-kW coupler. The 10-kW model looks similar.

ly just under my ALS-600 amplifier, as can be seen in photo C. This is also convenient for viewing from my normal operating position, as seen in photo D.

Once the coupler and display are mounted and interconnected, and DC power applied to the display unit, the fun really starts. First of all, you'll notice that there is no power switch. The PowerMaster display comes on as soon as DC power is applied. If there is no RF activity for two minutes, the display dims to half brightness. After 10 minutes, the display unit turns itself off. However, as soon as RF power is detected, the PowerMaster turns back on automatically and is ready to go.

The PowerMaster powers up in the normal Power/VSWR mode as seen in photo E. The first thing you need to do is punch the "Menu" button to cycle through the menus until you find the "Forward Power" and "Reverse Power" trim menus (see photo F). It is here where you enter the trim values from the coupler using



Photo C— PowerMaster and ALS-600 amplifier setup.

the "Mode Select" button. The PowerMaster automatically selects any one of three ranges, with 1024 A/D steps per range, based on your transmit power in order to give maximum resolution. Therefore, the next thing you may want to do is scroll to the "Bargraph Range" menu and select the range most appropriate to your expected transmit power. I like to operate from QRP up to 600 watts, so I chose the lowest power range of 50/250/1250 watts to provide the best resolution for my particular setup.

Before we get to using the meter on the air, I want to note that the PowerMaster is undoubtedly the most accurate power meter I have. How do I know this? While I was at Array Solutions, I observed the calibrated HP set-up in action, and actually watched the determination of the calibration "trim" factors for my particular coupler! As I mentioned earlier, the HP test setup



Photo D—The author's HF station. The PowerMaster is located for convenient viewing while operating.

uncertainty is  $\pm 1.5\%$ . Since the PowerMaster coupler response tracks essentially dead-on with the HP 436A setup, Array Systems specs the final accuracy of the PowerMaster at  $\pm 3\%$  once the trim factors are entered.

As I began to use the PowerMaster, I found myself changing the peak power hold time from the fastest (0.2 seconds) for CW operation, to the slowest (2 seconds) during SSB operation so I could read my peak power accurately. However, the long peak hold time also gave me some interesting information on my transceivers. The PowerMaster detector has a very fast response—so much so that it can catch transmit output power overshoot on your first “dit” before your ALC takes hold. I found overshoots ranging from zero to 10 watts on my various transceivers at various power levels. I also found the VSWR bargraph fascinating to watch during tuning of my antenna system. When I punch the “TUNE” button on my auto-tuner, the VSWR bargraph in the PowerMaster instantly follows the tuning progress.

There are also several PowerMaster alarm features that are very useful. You can set thresholds for VSWR alarms, and high- and low-power alarms. The low-power alarm can be used to indicate that your amplifier is not in-line or has tripped out for some reason. Also, the VSWR and high-power alarms can be used to trip relays within the PowerMaster to protect your amplifier. As an example, you can simply pass the amplifier enable line through the “PTT In” and “PTT Out” phono jacks on the back of the display unit. To get around the typical 10–20 ms amplifier relay operation time, for maximum speed you can use the PowerMaster relays to enable the transceiver inhibit input for those radios with this feature, or you can apply a fixed voltage through the relays to your transceiver's ALC input to turn down power.

## The Software

The PowerMaster is truly a software-defined unit. There is an RS232 port on the back for connecting the PowerMaster to your computer, which can be used both to control the unit via the supplied PowerMaster Lite software and to download free firmware updates. I didn't immediately connect my PowerMaster to my PC, as I'd been told that PowerMaster Lite V3.0 would be released within a few days (the CD supplied with my unit contained V2.0). However, I had plenty to play with in the intervening days anyway.

When I received the V3.0 update notification via e-mail, I grabbed an RS232 cable and went to plug it into the back of my computer, only to discover that this computer doesn't have an RS232 (serial) port! After a quick trip to my local electronics superstore for a serial/USB adapter (Array Solutions has test-

ed, and therefore recommends, using a KeySpan USA-19HS USB/Serial adapter, but I could only find a cheap \$20 unit), I connected the cables, installed the USB/Serial driver—and had complete communications and control of the PowerMaster through my PC. Downloading the new V3.0 software was easy, and I was up and running in minutes. Man, the software display and functionality are great!

First of all, with just a click of your mouse you can easily change any of your settings—including VSWR and Power Alarm thresholds, and PTT In/ Out relay operation. Also, you can set up and easily select HF and 6-meter trim groups (and more if you have more couplers) by clicking on the “HF” button on the lower right of the display. Finally, you can read return loss in dB, and transmit power in dBm.

Fig. 1 is a screen capture of the normal PowerMaster computer display in action. I was transmitting with 72 watts (upper bargraph and upper right-hand small box) into my vertical on 20 meters. The reflected power was 5 watts (lower bargraph and right-hand adjacent small box) and the SWR was 1.71:1 (lower right-hand box). As you can also see, the antenna return loss was 11.63 dB, and the power is also displayed as 48.57 dBm.

You can also double-click on the display to give you a more compact view, for more conveniently displaying the PowerMaster screen along with other applications. In the condensed display (fig. 2), I'm transmitting with 506 watts forward power, and I have an SWR of 1.20:1. Notice that the bargraph simultaneously displays forward power (blue bars) and reflected power (red bars)! Pretty slick! Once you start using PowerMaster Lite, you'll probably always have your computer on when you are operating.

## Upcoming Features

Array Solutions continues to improve the product, and makes these improvements free through its software/ firmware download capability. There are two new features that may



Photo E—The standard PowerMaster “Turn-on” display.



Photo F—Forward and reverse trim values recorded on the coupler are set in this and the next menu screen.



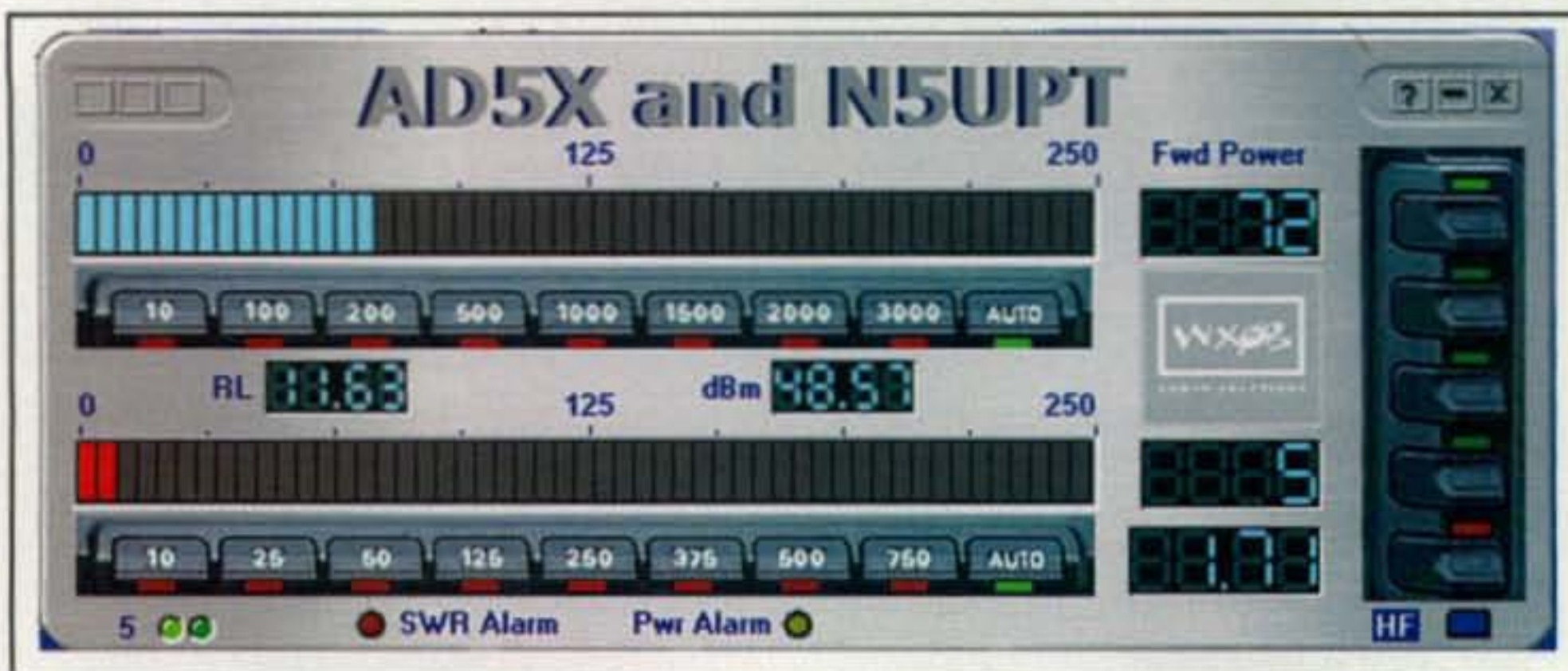


Fig. 1— PowerMaster Lite V3.0 normal computer screen display.

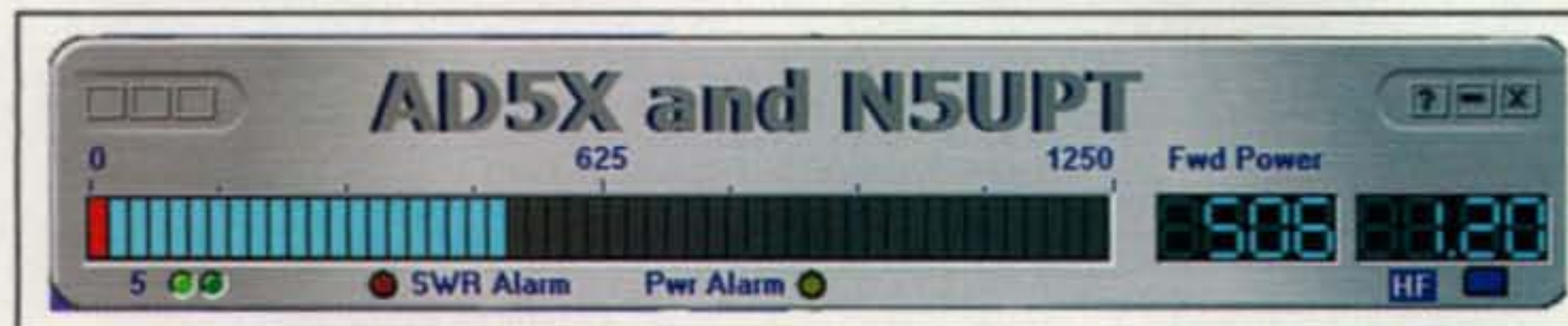


Fig. 2— Condensed display, but all important information is still available.

even be available by the time this review is published.

The first new feature will be an AM modulation meter. This will allow AM operators to “teach” the PowerMaster the un-

modulated carrier, and then the bargraph will display the percentage modulation based on that. In addition, the peak power will be displayed.

The second new feature will be an

“automatic coupler scanner” capability. When this feature is implemented, you will be able to add multiple couplers to your PowerMaster. The PowerMaster will scan them and find the active one, and then automatically use the appropriate trim factors for the active coupler.

Finally, Array Solutions is working on a “Pro” version of the software, with a variety of added features. The “Pro” version will be an extra cost option. Refer to the Array Solutions website at <<http://www.arrayolutions.com>> for more details.

## Conclusion

Array Solutions' PowerMaster VSWR/ RF Power Meter is a reasonably priced lab-grade power meter (list price: \$400 with 3-kW coupler, \$500 for the 10-kW version) that will forever keep you from wondering what your true transmit power is. It integrates well into any station, and is particularly nice to use with your station computer. For those of you with amplifiers, the PowerMaster can also provide high-SWR amplifier protection if something suddenly goes wrong with your feed system or antenna. Finally, with its easy on-line firmware and software upgrade capability, you never have to worry about product obsolescence!

## A Visit to Array Solutions



Photo G— The first view of Array Solutions. You definitely know when you've arrived!



Photo H— One test station at Array Solutions. This one is not used for testing during contests!

Array Solutions is located in Sunnyvale, Texas, a suburb of Dallas and only 18 miles from my home. Driving into Array Solutions is pretty impressive, as the first thing you see is a tremendous ham radio antenna system as seen in photo G.

Array Solutions is owned and operated by Jay Terleski, WX0B. Jay started his company in 1993 as a hobby-type firm, but it turned into a full-time business within a few years. Jay's team includes his wife Sharon, N5CK; Bob Naumann, W5OV; David Banks; David Kinsell, KD4UDY; John Beckerich, KE5JUF; Ken Brown, WB9AJJ; and Karen Swope—an *almost* all-ham company! This is the primary development, prototyping, and manufacturing test team for all Array Solutions products. After the products are designed,



Photo I— Bob Naumann, W5OV, is not making a QSO with the IC-756PROIII. He is calibrating a coupler for AD5X.

most are then built by contract manufacturers. However, Jay and his team do all the final product tests. In addition to the products shown on the Array Solutions website <<http://www.arrayolutions.com>>, Jay and his team also do custom engineering designs for both individuals and large companies.

Any ham would find the Array Solutions engineering/test lab to be very impressive. Some of the “test equipment” employed includes a Ten-Tec Orion, two ICOM IC-781s, an Amp Supply LK-800TNY (seen in photo H), a Kenwood TS-850, an ACOM-1000, and the primary PowerMaster test generator—an ICOM IC-756PRO3 (seen in photo I). According to Jay, product testing comes to a halt on contest weekends!

# Every LDG Electronics Product has a Two-Year, "No Questions Asked" Warranty

## Your Power Problems—Solved!

### New! The Multi-DC, a 12 Volt DC Distribution Box

The provided cables have the right coaxial DC power plug to connect to all your LDG products. The Multi-DC can source up to three amps; each of the six outputs can provide up to .5 amps to your LDG accessories. The Multi-DC comes with an input cable, and six output cables, each 3 feet long.

The six outputs are organized in three groups of two. Each pair is internally regulated to 12 vdc, thermal protected and short-limited; a short circuit just shuts down the regulator and turns off that output. So, with the Multi-DC, you can easily and safely power your LDG tuners and accessories (with more coming, by the way!).

List Price \$49



"The Forward Power is 112 Watts"

The "Talking" Watt Meter

The TW-1 Talking Wattmeter provides an aural spoken indication of power and SWR using a digitally recorded voice. It is ideal for the vision-impaired, for those of us in the "bi-focal set", or just for those times when you need to be looking somewhere else. At the press of a button, the TW-1 speaks the forward power, reverse power or SWR. Three languages are available: English, Spanish and German. It includes its own internal speaker; no external audio hookups are needed. Also available the TW-2 for UHF/VHF.

List Price \$149

### AT-897 for the Yaesu FT-897



If you own a Yaesu FT-897 and want a broad range automatic antenna tuner, look no further! The AT-897 Autotuner mounts on the side of your FT-897 just like the original equipment. We even added the ability to mount the "feet" on the side of the tuner so when you are transporting your rig by the handle, you can safely set it down and not worry about scratching the case. The AT-897 takes power directly from the CAT port of

the FT-897 and provides a second CAT port on the back of the tuner so if you are using another CAT device, hooking it up couldn't be easier.

List Price \$199

## Your Eye Strain Problems — Solved!



Yaesu's popular FT-857 and FT-897 transceivers are wonders of compact efficiency. These do-anything, go-anywhere transceivers were science fiction just a few years ago, but ham's today are using them in shacks, mobiles and on expeditions from the back yard to the top of the world.



The FT-Meter presents a lush, highly readable 2.5" meter face with calibrated scales for signal

strength and discriminator reading on receive, and power output, SWR, modulation, ALC action and supply voltage on transmit.



Each function is selectable from the radio's menu.

Easily visible from anywhere on your desk or dash, the FT-Meter is illuminated by any external 12 vdc source.

The FT-Meter comes fully assembled and ready to go; just plug it into the radio and you're in the picture like never before.

List Price \$49

## Your Cable Problems—Solved!

RCA-14 is a breakout box for the accessory jacks on most popular transceivers. It comes with cables with the right DIN plugs, and all the outputs are blessedly simple RCA



jacks. You simply plug the RCA-14 into your radio's accessory jacks, and all your ports are right there at your fingertips; just plug and play, one function or all of them, makes no difference. And, you can change things around as often as you like; it's as simple as swapping out an RCA plug.

The RCA-14 comes with a DIN 13 cable, a mini DIN 6 and a mini Din 8. The DIN 13 cable breaks out the functions to RCA jacks 1 - 13, while the mini DIN 6 goes to RCA 1 - 6, and the mini DIN 8 goes to RCA 7 - 14.

You can use the DIN 13 or the mini DIN 6 and/or 8, depending on your radio.

The RCA-14 is compatible with: Icom 703, 706, 718, 746, 756, 7000 and 7800, Yaesu 817, 857, 897 and 840, Kenwood 480, 570, 2000 Ten Tec Orion and many more radios.

List price \$59



The DTS Series

Antenna Switches



Tired of that tangled mess of coax and pigtailed in your shack? Always worrying about whether you set the ground

switch on your antenna before you left your shack? LDG's new DTS Series antenna switches are for

you. Instantly switch your rig between 4 or 6 antennas with the press of a button. Auto-grounding when you shut your rig down. Purchase the additional remote control and put the DTS Series switch anywhere indoors and operate it from your desk. They handle up to 1500 watts of RF power on HF (250W on 6M), and can be used with any coax-fed antenna.

List Price DTS-4 \$79, remote \$39  
DTS-6 \$99, remote \$49

No Questions Asked! Every LDG Product comes with our industry leading 2-Year warranty on the performance of your product. Just contact us to let us know your problem and we will repair or replace your product—NO QUESTIONS ASKED!



# Now! With All of the Cables Included - Nothing More to Buy The First Autotuners with True Plug and Play Simplicity.

At LDG Electronics we have always been the innovators in the automatic tuner industry. We built the first desktop switched-L tuner, the first automatic tuner for QRP radios, the first automatic tuner with and remote control head, and the first automatic tuner with 3-D memories. We were also the first manufacturer with a two year warranty on all of our products. Now we are including all of the necessary interface cables with every tuner we sell. No more getting your new tuner home and not having the right interface cable—everything you need is included in the box!



## Z-11Pro

**The Return of a Legend.**

The original portable Z-11 was one of LDG's most popular tuners, accompanying adventurous hams to their backyards, or to the ends of the earth. Now meet the Z-11Pro, everything you always wanted in a small, portable tuner designed from the ground up for battery operation.

Only 5" x 7.7" x 1.5", and weighing only 1.5 pounds, it handles 0.1 to 125 watts, making it ideal for both QRP and standard 100 watt transceivers from 160 - 6 meters.

With 8,000 memories in LDG's exclusive "3-D Memory" array, the Z-11Pro uses LDG's state-of-the-art processor-controlled Switched-L tuning network. It will match dipoles, verticals, inverted-Vs or virtually any coax-fed antenna. **Ready to go right out of the box! No extra cable to buy.**

List Price \$179

## AT-200Pro

**The first auto tuner specifically designed for today's high-powered transceivers.**



The AT-200 features LDG's new "3-D memory system" allowing up to eight

antenna settings to be stored for each frequency. Handles up to 250 watts SSB or CW on 1.8 - 30 MHz, and 100 watts on 54 MHz (including 6 meters).

**Ready to go right out of the box! No extra cable to buy.**

List Price \$249



## AT-100Pro

**Automatic Antenna Tuner**

This desktop tuner covers all frequencies from 1.8 - 54 MHz (including 6 meters), and will automatically match your antenna in no time. It features a two-position antenna switch, allowing you to switch instantly between

two antennas. The AT-100Pro requires just 1 watt for operation, but will handle up to 125 watts. The AT-100Pro includes over 2,000 memories for each antenna, automatically storing tuning configurations for each frequency and band as you use them.

List Price \$219

## AT-7000

**The Hottest Radio in the Industry! Now with It's Own Autotuner!**



The AT-7000 is the ideal tuner for IC-7000 & other ICOM Radios: Covers all frequencies

from 1.8-54 MHz (including 6 meters), and will automatically match your antenna in a flash. Requires just 0.1 W for operation, but will handle up to 125 W (100 W on 6 m), making it suitable for everything from QRP (IC-703Plus) to a typical 100 W ICOM transceiver.

**Ready to go right out of the box! No extra cable to buy.**

Tune with the AT-7000 or use your radio. Includes over 2,000 memories, uses latching relays, tuning range is 4-800 ohms, powered by your radio. Includes ICOM interface cable.

List Price \$169

## AT-200PC

**The First Automatic Tuner Designed Specifically for PC Rig Control**



Now you can have a state-of-the-art, high performance automatic

tuner and still run your whole station right from your keyboard and mouse. LDG's AT-200PC is a special version of the popular AT-200Pro, designed for PC control. All of its functions are controlled entirely by a program running on your PC. The tuner itself can be installed out of the way, on the floor or even in another room, interfacing to your PC via a serial or USB cable.

List Price \$259

Visit our new  
Web site:  
[www.ldgelectronics.com](http://www.ldgelectronics.com)  
LDG Electronics, Inc.  
[ldg@ldgelectronics.com](mailto:ldg@ldgelectronics.com)  
410-586-2177  
Contact Your Favorite  
Dealer to Purchase



## AT-1000

**An Autotuner for use with your amplifier!**

No more knob spinning or inductor rolling. Tunes your antenna in 1 to 8 seconds when you QSY either in the same band or to a different band! Easy installation and use makes this the choice for any Amateur Radio Operator with an amplifier.

Power rating HF (1.8 to 30 MHz): 1000 Watts Single Side Band, 750 Watts CW, 500 Watts Digital (RTTY, Packet, etc.) including 6 meters. **Ready to go right out of the box! No extra cable to buy.**

List Price \$599

## Z-100

**The definitive low cost automatic antenna tuner!**



Designed from the ground up to provide the 100 watt power

handling you asked for, in a small, lightweight package, perfect for portable as well as sitting on your desk in your shack!

The Z-100 will tune with 0.1 to 125 watts (50 watts on 6 meters), making it an excellent choice for almost any radio or operating style. Backpackers and QRP operators will appreciate the latching relays. Power can be removed from the tuner once you have tuned. Additionally, when the tuner is not tuning, it draws nearly zero amps. **Ready to go right out of the box! No extra cable to buy.**

List Price \$149



LDG Electronics, Inc.  
1445 Parran Road,  
St. Leonard, MD 20685  
Phone: 410-586-2177  
Fax: 410-586-8475

## Reflections

**W**ell, it is that time of year once again. A turbulent year has passed, and I, for one, often wish that we were back in the "good old days." Times have changed so much and so quickly that I wonder where it all will lead. Yes, it is true we have developed fantastic technology, but look at how our lives have changed as a result. Our incredible wireless technology has now made it quite easy to communicate with anyone, anywhere on the planet for both good as well as bad purposes. Our amazing GPS (global positioning system) has enabled accurate directional and navigational assistance from inside our own cars (or even on foot in the middle of a desert). However, it has also allowed weapons to hone in on a target with a degree of accuracy never before imagined, not to mention the complex military delivery systems that have been created to make use of it. With all of the life-saving techniques and accomplishments that have been developed, the means to end lives unfortunately has also "progressed" with alarming speed. This "future" that we are now living in is quite different (and I must say a lot more scary) than the one I imagined so long ago.

Back in the 1950s we lived in a northern suburb of New York City, and the only wireless technology I knew about was gleaned from the surplus equipment I found in my weekly sojourns to Canal and Cortland Streets in New York City, then affectionately known as "Radio Row." As a youngster just becoming a teenager, a one-mile walk to a bus stop, a 20-minute bus ride to the end-of-the-line subway station, and another 45-minute train ride (with a similarly technically oriented friend) to reach downtown Manhattan was completely routine. This trip was never even given a second thought by either my parents or me. There was no real risk of danger at all, and the worst that we ever encountered was a person here or there who had had too much to drink. We didn't bother them and they didn't bother us except on occasion to ask for a dime. As I recall, the streets were always crowded, too. Walking around lower Manhattan and collecting the various "goodies" was a pleasure, and the only significant thoughts that we had ranged from how much money we had left to spend to how we were going to carry all of this equipment "that we absolutely needed" back home. I am sure many of you shared these experiences, and not just in New York City, for that matter.

I clearly remember my first real radio receiver (after the famous crystal set I mentioned in one of my other "Reflections" columns). It was a one-tube regenerative unit with a type 30 vacuum tube and four separate hand-wound plug-in coils that took me a week to get right. I think the circuit came from an old *Radio Craft Magazine*, and the #6 1.5-volt dry cell and Burgess 67.5-volt "B" battery supply let me hear signals from all over the world through

my Trimm type B 2000-ohm earphones (which, by the way, I still have). Careful listening and then sending my hand-made SWL cards resulted in many replies (some of which I also still have), each and every one of which brought a great deal of excitement when they arrived in the mail. This, of course, led to the desire to not only hear, but also actually be able to talk to these far-away places. The result was a brief foray into the Citizens Band (when it was still okay to DX) and then the move into amateur radio. I don't know what today offers that can really equal the thrill of these adventures, but somehow the internet and the various "chat rooms" are not quite the same, at least not to me.

As I mentioned, I built (and loved) the regen receiver, but soon "graduated" to a Hallicrafters S-38, which was a birthday present I asked for probably a thousand times over the space of a year. This was now "big time," and I could not wait to get a ham license! I had some sort of psychological block to learning code (at the time), however, and could only achieve 7 or 8 words per minute, which, while not fast enough for a General class license, did enable me to settle for a Technician class instead. To have a chance with any DX therefore meant that 6 meters had to be my band of choice. A converter using a 6BQ7 as an amplifier and mixer connected to a 6C4 cathode follower (to match the receiver input) coupled with a 12AT7 oscillator chain was used ahead of my S-38, and now the band-spread dial of the S-38 tuned the lower portion of 6 in which I was interested. The result was a 6-meter receiver that was probably pretty good for the time.

My first 6-meter antenna, by the way, was made from a used three-element TV antenna and some discarded tubing (from another one), and it seemed to work quite well. It was mounted on the chimney of my parents' house and even had a leftover rotator. One day I will relate the ordeal (and arguments with my parents) I went through to actually install it, but install it I did, and I was "on the air"!

It is important to indicate that all of the equipment I had in those days (other than the receiver) was completely home-built. At that point in time it was the only way to go, as funds were not plentiful, or at least not in my circles. I was not yet an engineer or technically savvy, and I made plenty of mistakes, got burned from my trusty Weller soldering gun (iron) countless times, and also received my share of electrical shocks. However, when something finally did work, the joy and sense of accomplishment made it all worthwhile.

I also remember my first transmitter quite well. It had a 6AG7 (octal-based metal tube) oscillator which tripled an 8.36-MHz surplus FT-243 crystal to 25.08 MHz. This then drove the final, which used a 2E26 doubling to 50.16 MHz and a pi-network output circuit with a 365-pF variable capacitor salvaged from an old broadcast receiver. A 50-pF variable capacitor across the crystal even allowed a bit of QSYing. The modulator was a 12AX7 dual triode

\*c/o CQ magazine

driving a 6V6 beam-power pentode, and the power supply came from a transformer, electrolytic capacitor, and 5U4 rectifier salvaged from an old RCA 630 TV set. The entire transmitter was built on a BUD aluminum chassis, sported an aluminum-foil-covered plywood front panel, and used a surplus carbon microphone. The "high" output power (I think it was maybe 7-10 watts) did enable many enjoyable contacts and produced memories that have lasted my whole life.

I know that most youngsters will not think all of this is very exciting, since they are used to cell phones with full color screens, but to me it was and still is. I somehow don't think that configuring a "plug-n-play" device, communicating with friends you know beforehand, text messaging, or even downloading tunes can produce similar results. Unfortunately, many do think just that.

I acknowledge, however, that those were very different times. Back then, most people were enthralled with technology in general, and youngsters built many types of devices, not just electronic ones. In my library I have a number of books from the 1940s through the '60s describing toys, games, woodworking, and metalworking techniques and the like, all oriented toward young people (and not just so-called "geeks"). I think that if there was more of that today perhaps our youngsters could once again be interested in building something, even if only a bird house or backyard swing. Always remember that each aspect of the technology we enjoy today was developed by someone, at some point in time, and if our world is to continue along the lines with which we are comfortable, this spirit must somehow be imparted to our youth. Purchasing something and then simply turning it on and just operating it might be fun, but I still maintain that nothing equals the thrill of completing something (anything) that you have built with your own hands. I believed it then, and I believe it now. Your comments are, of course, always welcome.

My very best wishes to all of my loyal readers (even the ones who send corrections and criticisms from time to time!), and as I have said for the last 30+ years in this column, I sincerely hope that all of your wishes, hopes, and dreams come true. When you do buy those presents for the holiday season, however, perhaps you might consider something a little less hi-tech and a little more hands-on so that a youngster (or even an old timer!) can experience the kind of joy I am talking about. You never know; it just might rub off.

the best of 73, Irwin, WA2NDM



### Save \$10

#### on these Icom handhelds\*

'T90A, 'W32A, 'V8, 'V82, 'U82, 'R3, & 'R5  
(All Sport models, '91A, '91AD, 'P7A, & 'R20 are excluded)

### Save \$20

#### on these Icom mobiles\*

'2200H, '2720H, '208H, 'V8000,  
ID-1 & ID-800H  
( '7000, '703 Plus, 'PCR1500/2500,  
& 'R1500/2500 are excluded)

### Save \$25

#### on the 'R20\*

### Save \$50

#### on these other Icom rigs\*

'706MKIIG, '718, & '746PRO  
(plus get an additional \$200 instant savings on the '746PRO)

**November 1 thru  
December 31, 2006**

**Don't "leaf" out on these great savings!  
See your Authorized Icom Dealer today!**

\*Mail in rebate. Select amateur & receiver products only. Limit 10 units of each product per customer/address for the duration of this promotion. Allow 6-8 weeks for rebate delivery. US residents only. All offers good for US versions only, excludes all government, unblocked versions. This promotion can be used with other promotions except as noted.

AMATEUR | AVIONIC | LAND MOBILE | MARINE | RECEIVER | SYSTEM

**ICOM**

©2006 Icom America Inc. The Icom logo is a registered trademark of Icom Inc. All specifications are subject to change without notice or obligation. 8882

## Searching for Hams

**S**earching for hams? What is he talking about? Aren't we the ones who are there when all else fails? Well, in many cases we are there to provide emergency communications, but there has been an increased call for hams to provide emergency communications. Are there enough of us to go around?

In early October there were several articles in local community newspapers around the country putting out the call. In Huntsville, Texas the headline read "Officials searching for radio operators." According to the article, Huntsville and Walker County emergency management coordinators are looking for area volunteers interested in becoming amateur radio operators. In Florida the Salvation Army is looking for ham radio operators to help provide communications from their canteens. These canteens can be described as restaurants on wheels. By using the canteen's generator, the ham radio operators are able to radio back to the emergency operation center and request supplies such as ice or water. New Jersey hams are looking to increase their ranks as more members of the Amateur Radio Emergency Service and the Radio Amateur Civil Emergency Service get up in years and are unable to go mobile and provide emergency communications when needed.

In the October issue we discussed a new role for members of the Military Affiliate Radio System (MARS) which involves airport protection during

the hurricane season. Army MARS Chief Kathy Harrison said the new collaboration with the Transportation Security Administration "is likely to expand to other Department of Homeland Security (DHS) areas" in the future.

The Memorandum of Understanding (MOU) signed by the two agencies provides for use of MARS networks, manpower, and equipment to maintain communications during the initial 72 hours of incidents involving aircraft, mass transit, and pipelines. MARS is also tasked to provide interoperability with other communications systems.

"This is an extensive area and will require MARS member support across the continental United States," Chief Harrison said. "We will need many volunteers to man teams assigned to specific geographical areas, starting with airports throughout the hurricane corridor."

### Disasters Kill

According to the United Nations, disasters kill one-million people each decade and leave millions homeless worldwide. In all, the UN reported 360 natural disasters in 2005, with a death toll of 91,900, in addition to the December 2004 Asian tsunami that claimed some 250,000 lives. Tens of millions were left destitute and in need of aid.

When disaster relief workers arrive on the scene, they often find a complete or partial breakdown in telecommunications—telecommunications that are essential for finding out where the survivors are, how many people are injured or are dead, and how many need medical help or transportation to medical facilities. Jan Egeland, UN Emergency Relief Coordinator, says that aid workers rely heavily on telecommunications to coordinate complicated logistics and ensure the effective delivery of rescue and relief operations. "The use of telecommunications resources by humanitarian organizations is often slowed or prevented by regulatory barriers that make it extremely difficult to import and rapidly deploy telecommunications resources for emergencies. Similar barriers impede the establishment of disaster preparedness and prevention measures."

The Tampere Convention provides the framework for the unhindered use of all available and appropriate means of telecommunications in the service of international humanitarian assistance. For those countries that have signed the Convention, it removes regulatory barriers such as licensing requirements and import restrictions. It benefits all partners in international humanitarian assistance. The Tampere Convention covers the provision of emergency assistance by the Amateur Radio Service. It does not overrule national regulations, but the countries that are parties to the Convention have made the necessary arrangements to facilitate the import and use of telecommunications equipment in case of disasters. In

\*c/o CQ magazine  
e-mail: <wa3pzo@cq-amateur-radio.com>



*The destruction of this home is a result of Hurricane Katrina's landfall in a small Mississippi coastal town. Nearly 92,000 people lost their lives to disasters in 2005. (Photo courtesy of Leif Skoogfors/FEMA photo)*

practice, this means that operation in a disaster-affected country still remains subject to the applicable national and international regulations, such as frequency and call sign allocations, but that import and use of radio equipment will be authorized without additional restrictions or time consuming procedures.

### National Recognition

Numerous federal reports were issued in the wake of Hurricanes Katrina and Rita as to the value of the Amateur Radio Service. Now a section of the Department of Homeland Security (DHS) 2007 Appropriations Act, HR 5441, formally includes amateur radio operators as part of the emergency communications community. Amateur radio is included under the 21st Century Emergency Communications Act. Included within the DHS's Office of Emergency Communications—which the measure also creates—Regional Emergency Communications Coordination (RECC) Working Groups attached to each regional DHS office will advise federal and state homeland security officials.

In addition to amateur radio operators, the RECC Working Groups will coordinate with communications equipment manufacturers and vendors, including broadband data service providers, local exchange carriers, local broadcast media, wireless carriers, satellite communications services, cable operators, hospitals, public utility services, emergency evacuation transit services, ambulance services, and representatives from other private-sector entities and nongovernmental organizations.

According to the bill, the RECC Working Groups will assess the survivability, sustainability, and interoperability of local emergency communications systems to meet the goals of the National Emergency Communications Report. That report would recommend how the U.S. could "accelerate the deployment of interoperable emergency communications nationwide."

The ARRL says, "RECC Working Groups also will be tasked with ensuring a process to coordinate the establishment of "effective multi-jurisdictional, multi-agency emergency communications networks that could be brought into play following acts of terrorism, natural disasters, and other emergencies."

At the state and local-level RECC Working Groups will include state officials; local government officials; law enforcement; local fire departments; 911 centers; state emergency managers, homeland security direc-

# WOW Save Big

## Save \$20

Instant savings when you buy the 208H dual-bander!

## Save \$50

Instant savings when you buy the IC-7000 multi-bander!

Shown in optional remote head configuration



## Save \$70

Instant savings when you buy an IC-7000 along with an RMK-7000!

## Save \$90

Instant savings when you buy an IC-7000 along with an AH-4!

## Save \$100

Instant savings when you buy an IC-7000 along with an AT-180!

# Save Bigger



## Save \$200 Plus a Free PS-125\* (PS-125 at time of purchase!!)

Instant savings when you buy an IC-746PRO!

## Save \$100 Plus a Free PS-125\*

Instant savings when you buy an IC-756PROIII!

## Save \$500

Instant savings when you buy an IC-7800 along with an IC-PW1!

## Save \$200 Plus a Free PS-125\* (PS-125 mail-in to Icom America)

Instant savings when you buy an IC-756PROIII along with an IC-PW1!

## Free RMK706

Instant free goodies when you buy an IC-706MKIIG!

## For the love of ham radio.

Visit your Icom dealer today!

Free literature, 425.450.6088

or [www.icomamerica.com](http://www.icomamerica.com)

\*The PS-125 power supply is a mail-in rebate. Select amateur & receiver products only. Limit 10 units of each product per customer/address for the duration of this promotion. Allow 6-8 weeks for rebate delivery. US residents only. All offers good for US versions only, excludes all government, unblocked versions. This promotion can be used with other promotions except as noted. ©2006 Icom America Inc. The Icom logo is a registered trademark of Icom Inc. 8892

 ICOM®



Airports around the country will require support from MARS members during hurricanes and other disasters. (Jocelyn Augustino/FEMA photo)

tors, or representatives of state administrative agencies; local emergency managers or homeland security directors; and other emergency response providers.

At the federal level, RECC Working Group members will include representatives of the DHS, the FCC, and other federal departments and agencies responsible for coordinating interper-

able emergency communications with or providing emergency support services to state, local, and tribal governments. ARRL officials plan to follow up to determine how the ARRL can interact with the DHS and its Office of Emergency Communications.



**\$129.95**  
+\$8.00 S/H

**NEW! Leg Key**  
by Kent Engineering

*Same smooth performance  
and precise craftsmanship  
as other Kent classics.*

**Kent USA**

Toll-Free (888) 302-8777

214 Second Street, Manchester, KY 40962

**Perfection through Practice**

We were fortunate this year that the number of hurricanes and tropical storms that hit the United States was far less than originally predicted. Many groups took advantage of the lull to participate in emergency drills to test their emergency communications.

In Georgia, members of the Gwinnett Amateur Radio Emergency Service were presented with a situation where a deadly flu pandemic made its way to the Gwinnett area. Thousands of men, women, and children were bed-ridden, some hours away from death. The hams were told that communication via the internet, cell phones, and telephones was completely down. How should the hams respond?

According to Gwinnett County ARES spokesperson, Dorothy Jubon, N2DLJ, this is the biggest test the organization performs every year to ensure its ability to serve the public. "The assumption is that the flu has hit in force, so labor forces are diminished," she said. "You have all the people who are panicking and calling the hospital, (and) hospitals' systems will be down."

**www.CheapHam.com**

Have you been good this year?

For Great Holiday Prices on

- Alinco - ARRL Publications - Arrow Antennas
- Coax Seal - Heil - Hustler - Jetstream - Larsen
- LDG - MaxRad - OnStage - Opek - Ramsey Kits - Ranger - Uniden - W2IHY EQs - West Mountain Radio & More

*Where the frugal Santa shops !*







Eastern Washington Amateur Radio Emergency Service officials use this display to attract hams at local hamfests to become involved with emergency communications. (Photo courtesy of Gordon Grove, WA7LVC)

"This is just the scenario that Public Health has been talking about. We will go to the hospital or health clinic and set up communications." Amateurs will report to area health facilities in three counties and set up a communications network. According to local ARES officials, the Centers for Disease Control and Prevention have charged public-health agencies statewide to demonstrate the ability to communicate if typical methods of communication are down. The East Metro Health District created the scenario for the ham radio operators to respond.

According to a local ARES press release, other health agencies and hospitals as well as law enforcement from the three-county area will be also involved with the test. Jubon said, "It's about activating quickly, and it serves no purpose if we have a day's notice and can show up and camp out." She continued, "that while satellite phones can be reliable, air time can become congested, which validates the theory

### Orange County Hams "Talk Trash" Once Again

Members of the Orange County (NC) Amateur Radio Emergency Service group participated in another of their road clean-up activities conducted under the auspices of the North Carolina Department of Transportation's "Adopt-A-Highway" program. Ten ham operators and three of their children spent part of a Saturday morning combing an assigned section of New Hope Church Road for litter.

"Being responsible for keeping our chosen road section clean is just another opportunity for us amateur radio operators to serve our community," said clean-up organizer Raymond "Woody" Woodward, K3VSA. "We were fortunate to obtain a road close to the Orange County EOC, where we have a backup emergency communications station, and right in front of Sunrise Church, where our monthly club meetings now take place. During the summer months, we schedule our clean-up sessions for early in the morning to avoid the heat of the day. And, of course, we use our handheld radios to keep in contact with each other during the time we're along the roadway," he added.

So far, the cleanups have been completed in time for the radio operators to still enjoy their regular Saturday morning gatherings at the local restaurant.

The cleanup date was chosen to coincide with the "Litter Sweep" operation from September 16-30, which was proclaimed earlier this year by North Carolina's Governor Mike Easley. All Adopt-A-Highway groups were encouraged to conduct a roadway clean-up some time between these dates.

#### Got Trash

Aluminum cans, glass bottles, and fast-food paraphernalia made up the majority of trash picked up, but much more interesting items also show up from time to time. In fact, the NCDOT recognizes the volunteer who discovers the most unusual item. During this clean-up, volunteer Elizabeth Pielak, KI4GUT, found a dollar bill. Her husband Gary Pielak, AI4GT, found a brand-new chrome-plated combination wrench. Both these items were mentioned in the report that Woody Woodward filed with the North Carolina Department of Transportation, but Elizabeth and Gary do not hold out much hope that their discoveries will compete well against the likes of even stranger items, such as someone's false teeth and a home security lock box that clean-up volunteers in other counties found.



North Carolina hams can really talk trash! Participating in a litter clean-up day are (left to right) Michaela Woodward; Ken Kauffmann, KR4FM; Connor Jackson; Dietolf ("Dee") Ramm, KU4GC.; Emily Jackson; Peter Pielak, KI4GWB; Charlotte Pielak, KI4FCK; Adriano Marcuz, KI4OTN; Elizabeth Pielak, KI4GUT (holding a found dollar bill); Gary Pielak, AI4GT (holding a found wrench); Raymond ("Woody") Woodward, K3VSA; and Steve Jackson, KZ1X. (Photo courtesy of Mary Lisa Woodward, KG4PFB)

## FCC Report and Order WT Docket 04-140 Highlights

In October the FCC released Report and Order WT Docket 04-140. Several changes pertain to amateur radio emergency communications. The changes become law 30 days after they are published in the Federal Register. This means they should become law in late November or early December. Stay tune for the exact date. Here are the highlights with some early comments on the rule changes.

### 1. § 97.111 Authorized transmissions.

(a) \*\*\*

(2) *Transmissions necessary to meet essential communication needs and to facilitate relief actions.*

The FCC is "concerned that general restrictions on emergency assistance by amateur radio operators may run counter to an important purpose of the Amateur Service and may adversely affect the current level of emergency communications by raising questions that might discourage turning to amateur radio in emergencies." The Report continued, "that amateur stations may, at all times and on all frequencies authorized to the control operator, make transmissions necessary to meet essential communication needs and to facilitate relief actions."

2. Section 97.113 is amended by revising paragraph (e) to read as follows:

### § 97.113 Prohibited transmissions.

(e) *No station shall retransmit programs or signals emanating from any type of radio station other than an amateur station, except propagation and weather forecast information intended for use by the general public and originated from United States Government stations, and communications, including incidental music, originating on United States Government frequencies between a manned spacecraft and its associated Earth stations. Prior approval for manned spacecraft communications retransmissions must be obtained from the National Aeronautics and Space Administration. Such retransmissions must be for the exclusive use of amateur radio*

*operators. Propagation, weather forecasts, and manned spacecraft communications retransmissions may not be conducted on a regular basis, but only occasionally, as an incident of normal amateur radio communications.*

The report says "Section 97.113 does not prohibit amateur radio operators who are emergency personnel engaged in disaster relief from using the Amateur Service bands while on a paid duty status. These individuals are not receiving compensation for transmitting Amateur Service communications; rather, they are receiving compensation for services related to their disaster relief duties and in their capacities as emergency personnel."

The new rule says *weather forecasts ... retransmissions may not be conducted on a regular basis, but only occasionally, as an incident of normal amateur radio communications.* This may allow NOAA weather warnings to be broadcast.

### § 97.407 Radio amateur civil emergency service.

(a) \*\*\*

(b) *The frequency bands and segments and emissions authorized to the control operator are available to stations transmitting communications in RACES on a shared basis with the amateur service. In the event of an emergency which necessitates invoking the President's War Emergency Powers under the provisions of Section 706 of the Communications Act of 1934, as amended, 47 U.S.C. 606, RACES stations and amateur stations participating in RACES may only transmit on the frequency segments authorized pursuant to part 214 of this chapter.*

RACES stations are no longer limited to specific frequencies or band segments within the Amateur Radio Service.

Other rules involve the transmission of different types of data as well as the Alaska Emergency Frequency. The new rules are definitely worth reading.

of ham radio being the best communication method.

## Be Ready

This isn't just a slogan being used in some states; it's a skill people are practicing. Alexandria, Virginia staged a preparedness day expo called "Be Ready Alexandria." At this type of event you could invite people interested in emergency preparedness to become ham radio operators.

"Alexandria Preparedness Day is intended to give our residents, businesses, and other participants a chance to collectively learn how they can prepare for all types of emergencies. This expo is designed to give them the opportunity to meet our first responders in person and get a hands-on feeling of what it is like to serve our city," said Alexandria Fire Chief Gary Mesaris. He specifically acknowledged the dedication of citizens who have volunteered to become part of the Community Emergency Response Teams (CERT).

"This proclamation captures the importance this city gives to emergency

preparedness. Our city has the best emergency preparedness in the region. I want to share my heartfelt thanks for all you do," Gaines told the CERT volunteers seated before him. "When Katrina struck the Gulf Coast, it was a devastating event that caused more than \$81 billion in damage and killed more than 800 people."

Local amateur radio operators participated in the event, along with the American Red Cross, the Salvation Army, Neighborhood Watch, Alexandria Neighborhood Watch, Boy Scouts, Alexandria Medical Reserve Corps, Animal Welfare League, and a variety of city agencies and first responders.

If you are attending a ham radio event such as a hamfest, here's an idea from ARRL Eastern Washington Section Emergency Coordinator Gordon Grove, WA7LNC. He uses a well designed display to recruit new ARES members. Grove says the display features a repeating auto-advance Microsoft PowerPoint presentation featuring approximately 100 photo images, one by one, over a common background, with a general message "slide" about

"EWA ARES/RACES Serving the Public" appearing every five images. He says a repeating video presentation can be added off to the side. There's room for literature in front of the display, and most times, a person staffs the display to answer questions and increase the interest of passersby.

## Final Thought

We identified the need and recognition for amateur radio emergency communications. We are being asked to participate within a more formal emergency-preparedness plan. With all of this, we know that in many areas more hams are needed to meet these requirements and requests. We need to recruit and train.

Our thanks to Raymond "Woody" Woodward, K3VSA, and Gordon Grove, WA7LNC, for supplying information for this story. As we look forward to the new year, let's give ourselves, our families, and our communities the gift of preparedness—when all else fails.

Happy Holidays! Until next year...

73, Bob, WA3PZO

# Contesting and DXing Products from Array Solutions

## OptiBeam

Unbeatable Flexibility and Band Selection

41 models to choose from, 80 m to 6 m mono banders, 2 bands to seven bands on one feed line. From the small lot QTH to the largest contester or DXer, WE HAVE WHAT YOU'RE LOOKING FOR!



**OB18-6**

The big sixbander 40-20-17-15-12-10 m  
3el 40 m / 4el 20-12 m / 7el 10 m /  
boom length 39 feet



**OBW10-5**

Unbelievable wire beam 20-17-15-12-10 m  
2el Moxon 20-17 m / 2el 15 m / 2el+ 12-10 m /  
12 foot boom.  
Unique compact structure / tremendous performance.  
Strong, QTH installation or DX-pedition.



**OB804020**

Unique interlaced triple monobander 80-40-20 m  
2 el 80 m / 3el 40 m / 5 el 20 m /  
boom length 55 feet

- Computer optimized designs ■ Real monobander performance ■ Optimum element positions on the boom ■
- No lossy traps ■ No switching, tuning or moving parts. The ultimate in reliability ■ Superior manufacturing and quality ■ Made in Germany ■



**OptiBeam Antenna Technologies**  
Represented by Array Solutions, WX0B in North America.

[www.optibeam.de](http://www.optibeam.de)  
[info@optibeam.de](mailto:info@optibeam.de)

## PRO.SIS.TEL. Big Boy Rotators

**The Most Powerful and Accurate  
Amateur/Commercial/Military/Industrial  
Antenna Rotators Available - Just Got Better!**



**PST61D**

Pro.Sis.Tel. rotators are designed to perform under tremendous stress while carrying large antenna loads - up to 81 square feet! Perfect for turning 80-meter beams, long boom Yagis, large log periodics and stacked arrays. Why turn just the antenna, when you can turn the entire tower?!

Worm gear technology generates incredible starting and rotating torque, and tremendous braking forces. All models now employ DC motors that deliver even higher torque and unparalleled controllability.

### Controller D

The new "Controller D" control box features a built-in computer interface. Fully control the rotator manually or via software. Also use your PC to program operating parameters into the box such as stop points, calibration, soft start/stop, reverse delay, rotation range, and more!

A wide range of azimuth and elevation rotators is available. Two-year warranty (US).



**NEW!**

Model:	Compare With:	Price:
PST641D	Ham IV, V (or less), G-400, G-800	\$795
PST2051D	T2X, RC5A-B, G-1000, Alfa-Spid	\$995
PST61D	HDR300, Orion 2800, G-2800	\$1,350
PST61DHP	Twice the Specs of the Nearest Competition	\$2,095
PST71D	2 to 3 Times the Specs of the Competition!	\$2,495

Controller D included with all models

## Array Solutions PowerMaster

**The Next Generation of SWR/Wattmeter;  
Delivering Outstanding Accuracy and Functionality  
at a Price You Can Afford!**

See Jan 2006  
QST Review



**PowerMaster**

- Available in Two Versions - 1 W to 3 kW (amateur) and 1 W to 10 kW (military/commercial)
- Typically within 3% accuracy over frequency and temperature
- Separate Control Head and Coupler/Sensor - Sensor can be remotely located for the ultimate in shack and mobile installation convenience, and moves high levels of RF away from your operating position - Say goodbye to RFI!
- High VSWR and Low and High RF Output Power Alarms - Programmable trip points with warning LEDs and relay outputs - tremendously handy for contesters and DXers! Lightning fast trigger response will protect your rig, your amplifier, and your rate!
- Instant FAST display and alarms unlike other digital meters
- Auto-Ranging Bar Graph Display Operates in Two Modes - Simplifies peaking your RF output or dipping your VSWR
- Large Vacuum Fluorescent Display - Easy to read, even in bright sunlight
- Peak Hold Modes - Programmable for fast, medium and slow response for CW and SSB
- Can be used stand alone or with the supplied software
- RS232 Application for Your PC - Complete control and programming via computer, perfect for remote station applications; firmware can be updated via Web site downloads
- All Metal Enclosure - Rack mount option available (1 or 2 units in a 19-inch 2U panel)
- Choice of Connectors - SO230, Type-N or 7/16 DIN
- Control/Display Head Dimensions - 3½ X 8¼ X 4¼ inches (HWD)
- Sensor Enclosure Dimensions - 2¾ X 2¾ X 6½ inches (HWD)

[www.arrayolutions.com](http://www.arrayolutions.com)

Phone 972-203-2008

[sales@arrayolutions.com](mailto:sales@arrayolutions.com)

Fax 972-203-8811

**We've got your stuff!**



## Radio Control: Ham Radio's "Other Radio"

**W**ith the holidays coming up, I thought it would be a nice change to take a look at ham radio's "other radio"—radio control, or RC. This is a communications mode of another sort. Radio control is one of the allowable "one-way" transmission modes for hams. It is a way for one machine or device to communicate with another machine or device. Most of the time, but not always, this includes a human being to interface with the machine under control.

Amateur radio operators worldwide have the unique privilege of having a "slice" of many pieces of the radio spectrum. Although specific frequency allocations may be different from one country to another, most countries have many frequencies and modes in common. This is how the whole world communicates on the ham bands.

In the world of RC, all sorts of vehicles that operate on land, sea, or air are commanded without wires. Sometimes these models have such incredible accuracy and realism that you cannot tell the model from the real thing (see photo 1). Sometimes these creations are difficult to describe, such as the fighting robots (Battlebots®) featured on the Comedy Central network, or shown on the Battlebot website <<http://www.battlebots.com>>

### The Gear—Radios

A complete RC "station" consists of a transmitter (the "control box") and a receiver (photo 2). The receiver takes the control signals and routes them to various motorized modules called "servos." The

servos rotate back and forth. Through a series of mechanical linkages, this rotation is translated into useful motion to control craft movement by either control surfaces such as an airplane wing, or steering the wheels on a car or truck (photo 3).

Radio-control transmitter and receiver systems are described by the number of channels for the type of craft the radio will control and their operating frequency. For cars, trucks, and motorcycles, two-channel radio systems generally are used. The transmitters for cars and trucks usually come in a "pistol-grip" configuration, with a steering wheel. The trigger controls speed, and of course the steering wheel steers the vehicle. Two-stick radios are also available for cars and boats and may help you transition to flying models later, since aircraft radios use control sticks rather than a steering wheel.

Four to six or more channels are needed to control the rudder, aileron, elevator, throttle, flaps, or retracts. If you have "extra" channels, they can be used to control other details, such as opening bomb bay doors or sliding a cockpit canopy.

Frequency-wise, in non-ham radio systems certain frequencies are designated for use for certain types of models. This helps prevent radio interference that can cause accidents. It is important to remember this safety rule, since an uncontrolled flying model or high-speed truck can be extremely dangerous to people, pets, and property.

\*16428 Camino Canada Lane, Huntington Beach, CA 92649  
e-mail: <[kh6wz@cq-amateur-radio.com](mailto:kh6wz@cq-amateur-radio.com)>



Photo 1—Some RC models have incredible detail and realism. Take a look at the pilot and the rivets on this plane owned by George Peters, a member of the Harbor Soaring Society (HSS) in Costa Mesa, California. (Photos by KH6WZ)



Photo 2—An RC "station" consists of a transmitter (left) and a receiver (right). The receiver, battery pack, and associated servo units are inside the model built and flown by Larry Frakes, KG6EG. The battery is just below the power switch, and the receiver is the small object in the middle. Two servos are visible below the receiver. Radio pulses (modulation) are used to command the servos to control the various functions on the model craft.

**OUTSTANDING BATTERIES FOR THE FT-817(ND) and FT-897 (D)**



Great PERFORMANCE  
Great PRICES  
Thermal Fuse Self-Resetting Fuses  
FAST-CHARGE w/o removing from FT-817(ND)

FAST Chargers for these Packs  
2.5 hrs for OPP-817  
4 hrs for OPP-897



**Autotune Your Motorized Antenna**  
Great with IC-706KIIG  
Uses Radio's Tune Button  
Covers 6-160 m; Easy install  
Yaesu Model Also.



Install Yourself or let W4RT

**One BIG Punch**

The Most Popular FT-817(ND) Speech Compressor Around  
Great for FT-857(D), FT-897(D), FT-817, & FT-100(D) too!



Increases Your Talk Power 5 dB

Available for most Yaesu and ICOM Microphones

**COLLINS MECHANICAL FILTERS**

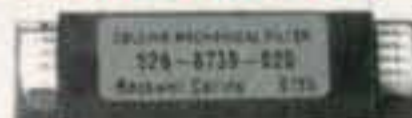
**DUAL-FILTERS for IC-703 & IC-718**



**500-Hz CW Filter**  
FT-817(ND), 857(D) & 897(D)  
IC-703 & IC-718



**FT-817(ND) DUAL-FILTERS**



**2.3-kHz SSB Filter**  
FT-817(ND), 857(D) & 897(D)



**AT-7000 PERFECT Tuner for ICOM IC-7000**  
Frequency-Sensing Memory; Cable Included.

Visit the **NEW W4RT Web Site**  
**www.w4rt.com**  
Easy to Find What You Need & Lots of Helpful Information

Prices & Specifications Subject to Change Without Notice

**bhi Amplified DSP Module**

Can be used with any speaker to provide outstanding noise cancellation (up to 35 dB).  
8 Levels.  
3 Watts output.  
EASY to Install.



**Noise Cancelling DSP**

bhi Ltd. dynamically-adaptive neural-network technology achieves remarkable noise and tone reduction. Fits most radios incl. FT-817, IC-736/738, IC-706MKIIG, TS-50, TS-440, DX-394, FRG-100.

**Z-11 Pro Ultra**

QRP to QRO; 8000 Memories to Handle Up to 4 Antennas; Includes Batteries Steel Cover Option Available for Holding Magnetic Paddles, Mics, etc.



Best All-around Autotuner Available!

**Z-100 Ultra**

Best Portable Autotuner Available  
Includes Batteries  
Thousands of Tunes



**NEW from bhi Radio Mate**

Compact Keyboard for FT-817, 857 & 897.  
Direct Frequency Entry  
Mode Change  
20 Freq. Memories  
TUNE button!  
Powered by Radio



Photo 3— The receiver commands various control surfaces with servos and linkages, like the airplane rudder.

The 72-MHz RC channels 11 to 60 are specifically for model aircraft, while the 75-MHz RC channels 61 to 90 are for "surface-use only"—in other words, cars, trucks, boats, motorcycles, and other non-flying models. A list of radio-control frequencies for the USA appears in tables I through III.

Since the ham radio RC band is usually less congested, modelers with a ham license are able to use the 50-MHz RC frequencies for any type of model. In fact, this is the main reason why my friend Larry Frakes, KG6EG, got his start in ham radio. He was flying RC airplanes in contests and wanted more flying time in the busy flying field.

On all RC running areas, a means to coordinate radio channels is always in

**RADIO WORKS**  
Antenna Fever  
Wire and Parts  
"And, not a dog in the bunch!"

**CAROLINA WINDOMS™ - best simple wire antenna yet.**

1.5 kW, CW/SSB, low takeoff angle for DX, use your tuner	
<b>CW 80</b> 80-10 m, 132' long Make a big signal.	\$125
<b>CW Short 80</b> 80-10m, 84' long, full performance	\$145
<b>CW 40</b> 40-10 m, 66' Used to set 2 world records.	\$115
<b>CW 160</b> 160-10 m. 265' Be heard on 160 and 80	\$160
<b>CW 160 Special</b> , 160-10 m, 132' Be on all bands	\$155
<b>G5RV Plus</b> 80-10 m, 102', with high power current balun	\$69.95

**NEW CAROLINA WINDOM "LP" series.**  
"LP" means "Low Profile." Matching transformer and Line Isolator are 1/4 the size of the standard units. Perfect for stealth, emergency, QRP, travel, etc. Full CAROLINA WINDOM performance, low visual impact. 600 watts PEP CW/SSB. Available in most CAROLINA WINDOM versions. Call

**Very Important**  
Prices are subject to change due to the very volatile metal and petroleum market conditions. See our web site or call us to confirm latest prices.

**Current Baluns**

B1-2K+	1:1	2 kW SSB	80-6 m	Current Balun	\$33.95
B1-4K Ultra		Ultra-high isolation version of the B1-5K			\$45.95
B1-5K+	1:1	5 kW SSB	160-6 m	Precision	\$43.95
B1-200	1:1	200 W SSB	160-10m	"Low Profile"	\$34.95
Y1-5K+	1:1	5 kW SSB	160-6 m	"YagiBalun"	\$43.95
B4-2KX	4:1	2 kW SSB	160-10m	Precision	\$59.95
RemoteBalun™		4:1 coax-to-ladder line interface			\$59.95

**RFI QUICK FIX™**

For really tough RFI and RF feedback problems, you can't beat the new T-4 and T-4G Ultra Line Isolators. It's isolation factor is 50% higher than previous models - far better than expensive imported copies. The T-4G goes even further with its built-in ground strap for direct line Isolator grounding. Before coax enters your shack, stray RFI is shunted directly to ground. Use with Vertical antennas at feed point. To prevent ground loop problems, install two T-4s between your transmitter, linear and tuner. Use with any antenna to reduce feed line radiation. This is the RFI BIG GUN.

**NEW T-4-500 Line Isolator. \$35.95** 1/4 the size of the original Line Isolator. 500 watts CW/SSB. Convenient size for home and mobile

All Line Isolators have SO-239 input and output connectors.

T-4 & T-5	160-10 m, 2 kW+, winding Z @ 3.5 MHz > 75K, @ 14 MHz > 50 K
T-4	Same as T-4G but without direct grounding \$39.95
T-4G	Ultra Line Isolator, max RFI protection \$44.95
T-4-500	35k @ 3.5 MHz, 75k @ 14 MHz 500 W \$35.95

Check our web site for comparison with other brands. You won't believe the difference. The others don't even come close to this level of isolation.  
Ferrite Cores, snap-on, 1-250 MHz 1/4 i.d. \$2.50 or 1/2" i.d. \$4.50

PL-259ST	Silver-Teflon	SALE	\$1.49
PL-259ST	Silver-Teflon	SALE	pack of 20 \$25.95
PL-259GT	Gold-Teflon	back in stock soon	
Coax & cable prices are per foot <100'>100'			
RG-213 Plus	Enhanced, 97% shield + super quality jacket		\$59/100'
Super RG-8X	1.5 kW@30 MHz, low loss, double shield		42¢/37¢
Super 400	LMR-400 type, same specs. Solid		\$65/100'

**Special \$26.95** while supplies last  
RG-8X, 100 feet with 2 PL-259s and molded-on strain relief installed

**RG-8X JUMPERS - PL-259 on each end. Factory made, molded strain relief, top quality coax.** 18' - \$6 3' - \$6.75 6' - \$7.50  
Double shield versions only \$1 more each

#14 HD	Stranded, 7-conductor hard-drawn	12¢
#14 FlexWeave	168-strand, bare, for any wire ant.	22¢
450 Ladder Line	#16 stranded conductors, poly, 410Ω	38¢/31¢
450 Ladder Line	#14 stranded conductors, poly, 390Ω	45¢/37¢
Tinned-copper braid,	for grounding, 1/2" @ 75¢/ft or 1" @ \$1.29/ft	
LadderLoc	Center insulator for ladder-line	\$13.95
Weatherproofing	Coax Seal, \$3.25 STUF, \$6 Cold shrink, \$7.50	
Pulleys	- for antenna support rope. Highest quality, small, lightweight, sailboat type for fibrous rope - for 3/16" rope \$14.95 or 5/16" rope \$16.95	

**Antenna Support Line** BLACK Dacron, single braid, fungus and sun resistant 3/16" 750# test \$14 per 100' \$120 - 1000' spool

Kevar-no stretch .075" dia. 500# test, Dacron jacket 200' spl \$19.50  
Kevar-no stretch 1/8" dia. >700# test, Dacron jacket 100' spl \$15

Orders & Technical (757) 484-0140  
FAX (757) 483-1873

**Order Hotline (800) 280-8327**  
Box 6159, Portsmouth, VA 23703

VISA and MC welcome. Give card #, exp. date, signature. Add shipping, call for estimate. Prices subject to change. Mention ad for sale prices.

Dealers Inquiries Welcome  
**Visit us at www.radioworks.com**

**General Catalog** High performance antenna systems, baluns, Line Isolators, wire, cable, coax, station accessories, tuners, coax switches, support line, etc. It's all there. Free, allow 2-3 weeks for delivery of our new "mini-catalog" or download the entire catalog from our web site.

place. This helps prevent accidents in case more than one RC pilot or driver is using the same channel. See photo 4 to see a typical frequency coordination board.

### More Gear: Support Stuff to Operate Safely

Just like the real-life counterparts, RC models need a "pit crew" as well as tools and support equipment to maintain and safely operate. Photo 5 shows a typical "flight box" that model-airplane pilots use to fly their planes. Included are small tools to adjust servos, linkages, and motor mounts; battery chargers and spare battery packs; a meter to check battery condition; and small parts that may wear out or break during a flight and need to be replaced.

In my area, the traditional "gas"-engine models have gone away. The noisy and dirty glow-plug engines of yesterday have been replaced with quiet, clean electric motors. Improvements in motor-drive technology and battery chemistry have increased the efficiency of making electricity into useful motion. This is a fancy way of saying that today's

Channel Number	Frequency (MHz)
00	50.800
01	50.820
02	50.840
03	50.860
04	50.880
05	50.900
06	50.920
07	50.940
08	50.960
09	50.980

Table I—Radio-control frequencies on the amateur radio 50-MHz band.

Channel Number	Frequency (MHz)
11	72.010
12	72.030
13	72.050
14	72.070
15	72.090
16	72.110
17	72.130
18	72.150
19	72.170
20	72.190
21	72.210
22	72.230
23	72.250
24	72.270
25	72.290
26	72.310
27	72.330
28	72.350
29	72.370
30	72.390
31	72.410
32	72.430
33	72.450
34	72.470
35	72.490
36	72.510
37	72.530
38	72.550
39	72.570
40	72.590
41	72.610
42	72.630
43	72.650
44	72.670
45	72.690
46	72.710
47	72.730
48	72.750
49	72.770
50	72.790
51	72.810
52	72.830
53	72.850
54	72.870
55	72.890
56	72.910
57	72.930
58	72.950
59	72.970
60	72.990

Table II—Radio-control frequencies on 72 MHz, aircraft use only.

Channel Number	Frequency (MHz)
61	75.410
62	75.430
63	75.450
64	75.470
65	75.490
66	75.510
67	75.530
68	75.450
69	75.570
70	75.590
71	75.610
72	75.630
73	75.650
74	75.670
75	75.690
76	75.710
77	75.730
78	75.750
79	75.770
80	75.790
81	75.810
82	75.830
83	75.850
84	75.870
85	75.890
86	75.910
87	75.930
88	75.950
89	75.970
90	75.990

Table III—Radio-control frequencies on 75 MHz, surface use only.

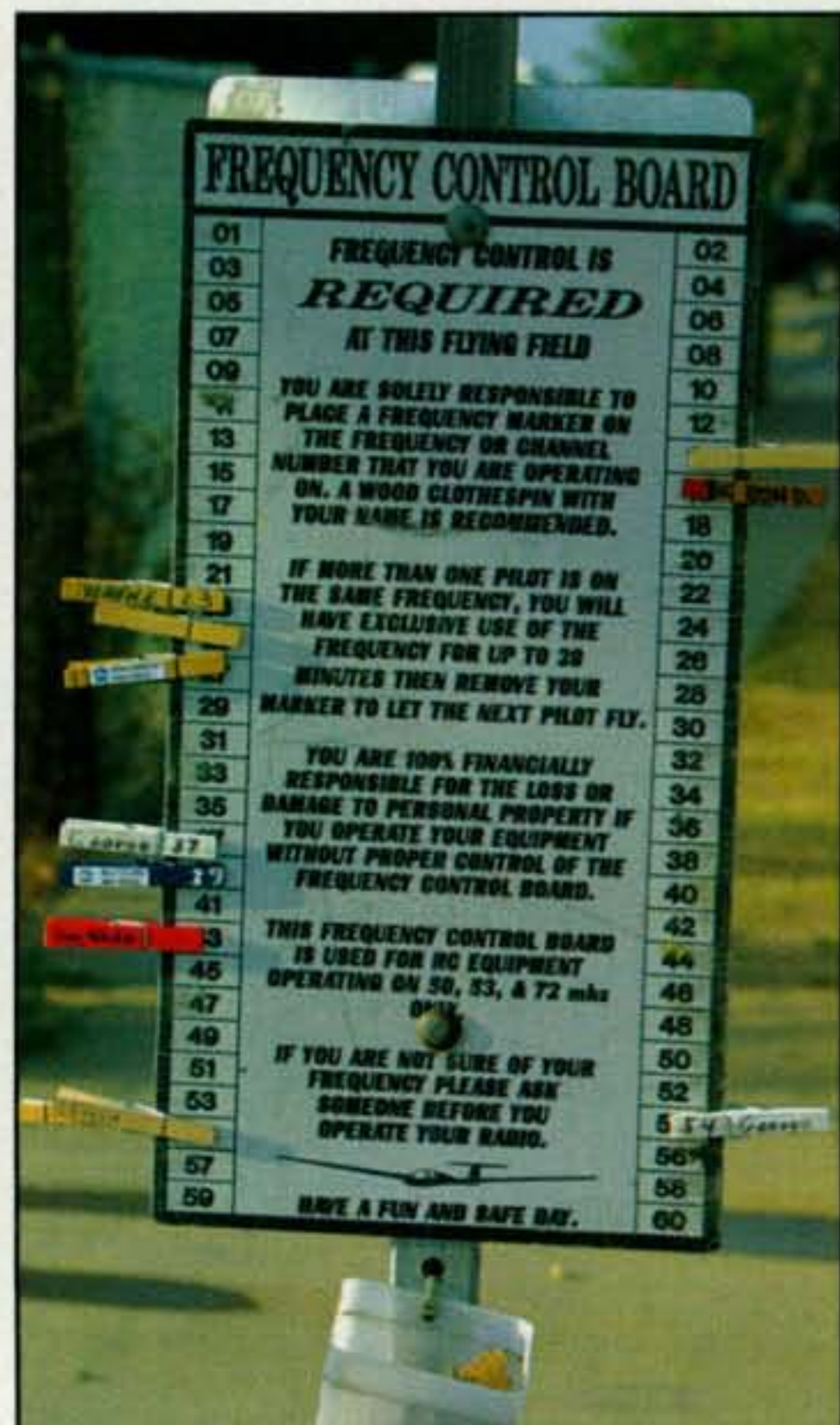


Photo 4—At the Mack Freed Memorial Field in Costa Mesa, California, frequency coordination is done by clipping the pilot's name and channel number on a frequency sign. The rules and regulations are also prominently posted.

**We Design And Manufacture To Meet Your Requirements**

\*Prototype or Production Quantities

**800-522-2253**

**This Number May Not Save Your Life...**

**But it could make it a lot easier! Especially when it comes to ordering non-standard connectors.**

### RF/MICROWAVE CONNECTORS, CABLES AND ASSEMBLIES

- Specials our specialty. Virtually any SMA, N, TNC, HN, LC, RP, BNC, SMB, or SMC delivered in 2-4 weeks.
- Cross reference library to all major manufacturers.
- Experts in supplying "hard to get" RF connectors.
- Our adapters can satisfy virtually any combination of requirements between series.
- Extensive inventory of passive RF/Microwave components including attenuators, terminations and dividers.
- No minimum order.

**NEMAL**

**Cable & Connectors for the Electronics Industry**

**NEMAL ELECTRONICS INTERNATIONAL, INC.**

12240 N.E. 14th AVENUE  
NORTH MIAMI, FL 33161

TEL: 305-899-0900 • FAX: 305-895-8178

E-MAIL: INFO @ NEMAL.COM

BRASIL: (011) 5535-2368

**URL: WWW.NEMAL.COM**

# MFJ giant SWR/Wattmeter

World's largest HF SWR/Wattmeter has **giant 6 1/2 inch meter!**

**This one you can SEE!** Extra-long scales gives you highly accurate SWR and power measurements. Huge numbers makes reading easy across your shack.

Like your analog watch, one glance at the meter needle gives you fast and accurate readings without actually examining the scale.

**New!**

MFJ's exclusive *TrueActive™* peak reading circuit captures *true* peak or average forward and reflected power readings.



MFJ-868 Has 20/200/2000 Watt ranges for accurate QRP or QRO operation.

**\$139<sup>95</sup>** Exclusive MFJ Wattmeter *Power Saver™* circuit turns on meter only when RF power is being measured.

Covers 1.8-30 MHz. Use 9 volt battery or 12 VDC or 110 VAC with MFJ-1312D, \$15.95. 7Wx5 1/2Hx5D in. SO-239 connectors.

**New!**

**Giant 144/220/440 MHz SWR/Wattmeter MFJ-867, \$149.95.** Similar to MFJ-868 giant SWR/Wattmeter, but for 144/220/440 MHz.

## MFJ Weather-Proof Antenna Feedthrough Panel

**New!** Bring three coax-fed HF/VHF/UHF antennas, balanced line, random wire and ground into your hamshack without drilling through walls... MFJ-4602 **\$59<sup>95</sup>**

MFJ's Weather-proof *Antenna Feedthrough Panel* mounts in your window sill. Lets you feed three coax-fed antennas, balanced line, random wire and ground without drilling through walls.

Simply place in window sill and close window. One cut customizes it for any window up to 48 inches. Use horizontally or vertically. High-quality pressure-treated wood with excellent 3/4 inch thick insulating properties is painted with heavy coat of white outdoor enamel paint. Edges sealed by weather-stripping. Seals and insulates

against all weather conditions. Gives years of trouble-free service. 3/4Dx3 1/2Hx48W in.

**Inside/outside** stainless steel plates bond all coax shields to ground. Stainless steel ground post brings outside ground connection inside. Three *Teflon®* SO-239 coax connectors, *ceramic* balanced line/randomwire feedthrough insulators.



## 6-Band Rotatable mini-Dipole for 40,20,15,10,6,2 M

Low profile 14 ft... 7 ft. turning radius... 1.5 kW... Directivity focuses signal, reduces QRM/noise...



**WARC Band Version Now Available!**

**New!**

MFJ-1775 **\$239<sup>95</sup>**

You can hardly see this mini 14 foot rotatable dipole from across the street!

Tiny 7-foot turning radius fits the smallest roof - perfect for houses, apartments/condos.

The low-profile MFJ-1775 is not much bigger than a TV antenna and nicely blends into the sky. It's easily turned by a light-weight TV rotator.

**It's no Wimp!** Its *directivity* reduces QRM/

noise and lets you *focus* your signal in the direction that you want -- so you can work some *real* DX.

**Operate** 6 bands -- 40, 20, 15, 10, 6 and 2 meters. Run *full 1500 Watts* SSB/CW on all HF bands!

**Its** entire length radiates. Each HF band uses a separate, highly-efficient end-loading coil wound on fiberglass forms with *Teflon™* wire with capacitance hats at each end (no lossy traps). 6 and 2 meters are *full-length* halfwave dipoles.

**Built-to-last** -- incredibly strong solid rod fiberglass center insulator and 6063 T-6 aircraft strength aluminum tubing radiator.

Assembles in an afternoon. Adjusting one band has little effect on other bands.

**MFJ-1775W, \$239.95.** WARC band version for 12, 17, 30, 60 Meters only.

### 80/40/20 Meter Rotatable Dipole



**New!**

**MFJ-1785, \$359.95.** DX the *low bands* on 80, 40, and 20 Meters with an efficient full 33 foot *rotatable* dipole! Handles a full 1500 Watts. Balun included. 6063 T-6 aircraft strength aluminum tubing with a solid center fiberglass insulator. Requires a medium-duty rotator such as Hy-gain's AR-40.

### Compact SWR/Wattmeter



MFJ-822 MFJ-842 **\$59<sup>95</sup>** **New!** Compact SWR/Wattmeter has huge 3 inch *lighted* Cross-Needle Meter, easily viewable from across shack.

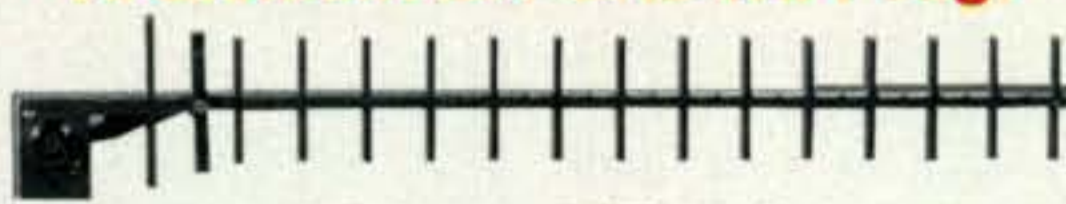
Read forward/reflected power, SWR *simultaneously*. 3 1/4Wx3 1/4Hx3 1/4D in. **MFJ-822** for 1.8-200 MHz, 30/300 Watts. **MFJ-842** for 140-525 MHz, 15/150 Watts.

### 2-Position Remote Ant. Switch



MFJ-4712 **\$79<sup>95</sup>** **New!** Switch any two antennas *remotely!* Single coax feeds two antennas, DC power, control signals -- *no extra cable needed*. Use 1.8-150 MHz antennas. 1500 Watts. 50-75 Ohms. 4W x2 5/8Hx1 1/2D in. fully enclosed, *weather protected* outside switch box has stainless steel bracket for 1 1/2 in. mast. 3 *Teflon®* SO-239s.

### 16-Element 2.4 GHz WiFi Yagi



MFJ-1800 **\$29<sup>95</sup>** 16-element WiFi Yagi antenna greatly extends range of 2.4 GHz, 802.11b/g WiFi signals. Turns slow/no connection into fast, solid connection. Highly directional -- minimizes interference. N-female connector. Tripod screw-mount. Wall/desk/shelf mounts. Use vertically or horizontally. 18Wx2 3/4Hx 1 1/4D in. 2.9 oz.

**MFJ-5606SR, \$24.95.** Cable connects MFJ-1800/WiFi antennas to computer. Reverse-SMA male to N-male, 6 ft. RG-174.

**MFJ-5606TR, \$24.95.** Same as MFJ-5606SR but Reverse-TNC male to N-male.

### Glazed Ceramic Insulators

MFJ-16C06, \$4.56, package of 6 authentic glazed *ceramic* antenna insulators. Extra-strong -- long antennas will not break, will not arc over or melt under full legal power. Extra-long ridges prevent high-voltage breakdown. Smooth wire holes prevent wire damage.

### Dealer/Catalog/Manuals

Visit: <http://www.mfjenterprises.com> or call toll-free 800-647-1800

• 1 Year *No Matter What™* warranty • 30 day money back guarantee (less s/h) on orders direct from MFJ

**MFJ** MFJ ENTERPRISES, INC.  
300 Industrial Pk Rd, Starkville, MS 39759 PH: (662) 323-5869  
Tech Help: (662) 323-0549  
FAX: (662) 323-6551 8-4:30 CST, Mon.-Fri. Add shipping.  
Prices and specifications subject to change. (c) 2006 MFJ Enterprises, Inc.

**MFJ... the World Leader in Ham Radio Accessories!**



*Photo 5— Just like the “real thing,” models need a “pit crew” and associated equipment to safely operate. A flight box as used by a model airplane pilot. In this flight box, tools and accessories are carried in a very handy cart, useful in moving everything from the parking lot to the flying field.*

electric RC models now allow longer run-times than ever before.

### Finally, The Models

I saved the best part for last—the models. There are hundreds of models to choose from. Do you want to fly, sail, or drive? Do you want to fly a glider, a “fixed wing” airplane, or a “rotary” helicopter? Do you want to drive a NASCAR race car or an off-road pickup truck? The possibilities are almost endless. Photos 6, 7, and 8 show three completely different types of RC airplanes.

The best way to find out what to get is to visit your local radio-control specialty shop. I would avoid the department or toy stores, since they usually have only the simplest “remote control” toys. The “real” RC stuff can be found in the specialty shops. Check a phone directory or do a Google search to find a radio-control shop near you.

There are also many magazines on RC modeling. Find a few of these magazines at your local bookstore, hobby shop, or library and read as much as you can. Also, just like beginning in ham radio, I highly recommend that you find an RC club to join. Not only will you be able to find others who will help you build or buy your first model, they can help you learn how to fly, drive, or sail it! (See photo 9.)

For beginners, it is best to go with the RC equivalent term for “plug and play.” For airplanes, there are three terms used to describe the amount of work needed to make the model fly. There are “kits,” in which everything must be built, and this is the most time-consuming and difficult way to go. It would be best to leave those to the more experienced builders. “Almost ready-to-fly,” or ARF, models usually require one or two evenings to assemble. Finally, the “ready-to-fly,” or RTF, models generally come pretty much completely assembled with radio and motor pre-installed. Usually this means that all you need to do is charge and install the battery packs, and you are ready to go. Similar terms apply for RC helicopters, cars, trucks, and boats.

### Your Budget

By now you probably are wondering how much all of this new gear will cost. If you visit an online radio-control store such



*Photos 6, 7, 8— Three very different radio-control airplanes found at a local model-airplane field near my house. The “flying wing” is very fast and aerobatic. Next we see a standard trainer model, and finally there are two beautiful scale-model military aircraft.*





Photo 9— It is always a comforting feeling to have an experienced friend join you on your first few flights. Here are two flying friends watching out for each other as the pilot flies a model with a newly installed, upgraded radio system.

as Tower Hobbies (<http://www.towerhobbies.com>), you can put together the wish list of everything you need. For example, I wanted to see what a complete RC helicopter system would work out to be. Shopping online is fun, since you really do not have to buy anything right away (just be sure to watch what icon or button you push!). For example, a complete, almost-ready-to-fly electric helicopter system can be purchased for under \$700. This includes the radio and servo system, as well as replacement parts such as rotor blades and a spare canopy. There are also "combo" kits, which include the aircraft as well as popular accessories you need to get going, for an even lower price. Go ahead and do some shopping online. It is the 21st century version of "window shopping."

I have only managed to scratch the surface of RC modeling in this column. The radio-control hobby is a fascinating combination of electronics, radio,

mechanics, and just plain fun. The best part for a ham who is getting into radio control is the number of open channels to use. You will most likely be among the very few to use the 50-MHz channels, and so you should be able to grab the most operating time while others wait in the "frequency queue."

As I looked through my collection of RC magazines, I noticed that most of them appeal to a younger crowd, judging from the images, advertisements, and writing style. The radio-control hobby is facing similar "recruitment" issues of capturing and retaining the next generation. Maybe we should take this as a suggestion to help recruit more youngsters into ham radio. My hope is that if you decide to get into the RC hobby, you will be able to convince your fellow radio-control operators to enter our world of ham radio.

Happy Holidays and . . .  
73, Wayne, KH6WZ

#### References and Resources

CQ VHF magazine, "Airborne Radio" column by Del Schier, K1UHF.

Academy of Model Aeronautics, 5161 E. Memorial Drive, Muncie, Indiana 47302 (phone: 765-287-1256; <<http://www.modelaircraft.org>>).

Battlebots® – Official Website: <<http://www.battlebots.com>>.

Remotely Operated Auto Racers (ROAR): <<http://www.roarracing.com>>.

National Organization for Racing Radio Controlled Autos (NORRCA): <<http://www.norrca.com>>.

Harbor Soaring Society: <<http://www.harborsoaringsociety.org>> or <[www.1hss.org](http://www.1hss.org)>.

#### Radio Control Online Stores

Use your favorite internet search engine to find a radio-control specialty shop near you or online. Google says there are about 4,380,000 entries for "RC models."

## From MILLIWATTS to KILOWATTS™

More Watts per Dollar™

- Transistors
- Power Modules
- Semiconductors
- Tubes
- Relays
- Wattmeters



ORDERS ONLY:

800-RF-PARTS • 800-737-2787

Se Habla Español • We Export

TECH HELP / ORDER / INFO: 760-744-0700

FAX: 760-744-1943 or 888-744-1943



An Address to Remember:  
[www.rfparts.com](http://www.rfparts.com)

E-mail:  
[rfp@rfparts.com](mailto:rfp@rfparts.com)



**RF PARTS**  
COMPANY



### What You've Told Us...

Our September survey asked about 6-meter activity and it appears from the results that the 6-meter ops among our readers made a special effort to reply, with 56% of those responding said they are currently active on 6 meters. While activity on "the magic band" has certainly been growing, it's unlikely that more than half our readers are currently active on the band. That said, 29% of our respondents said they'd been on 6 meters within the past week, 20% had been on within the past month and another 11% within the past year. Six percent said they were last on six one-to-five years ago, 3% were last on 5-10 years ago, and 10% have not been on within the past 10 years. Finally, 23% said they'd never operated on six.

Answering our question on "your perception of the distances you can work on 6 meters," 44% responded (correctly) "intercontinental, *not* only at sunspot peaks," followed by 24% answering "about 2500 miles, when conditions are right," 17% don't know, 8% each said about 1300 miles under the right conditions and "local/regional only," while 5% responded "intercontinental, but only at sunspot peaks." On our next question, 72% of the respondents said they were aware of this past summer's 6-meter openings between Asia, North America and Europe, but only 39% said they'd personally taken advantage of these openings to work new countries, states or grids on six.

Thirty-four percent of respondents said last summer's openings will encourage them to become active or more active on six, while 29% said they are already very active on the band, 23% said no, and 18% said they don't know. Our last question related to activity in VHF contests, with 40% of respondents saying they participate in the ARRL June VHF Contest, 35% each in the ARRL January and September VHF contests, 27% in the CQ WW VHF Contest, 15% in SMIRK contests, 13% in other 6-meter contests and 56% are not active in any VHF contests.

This month's free subscription winner is Keith Gilbertson, KØKG, of Rochert, MN.

## Reader Survey December 2006

With the recent release of the FCC's rulings on numerous pending rule makings (see page 2 for a summary), we got to wondering what you think about the various changes. We've selected a few of the more important elements of the ruling, and this month's questions seek to find out how you think they'll affect your ham radio activities.

Please answer by circling the appropriate numbers on the reply card.

1. Will the refarming of Novice HF frequencies affect your operating on phone?
  - Yes, in a positive way.....31
  - Yes, but not significantly .....32
  - Yes, in a negative way .....33
  - No.....34
2. Will the refarming of Novice HF frequencies affect your CW operating?
  - Yes, in a positive way.....35
  - Yes, but not significantly .....36
  - Yes, in a negative way .....37
  - No.....38
3. How will the changes in remote station control rules permitting auxiliary operation on 2 meters (Kenwood Sky Command system) affect your operating plans?
  - It will open up new operating possibilities for me .....39
  - It will have little or no impact on my future operating .....40
  - I live in a restricted community. This could be a boon to me .....41
  - Don't know .....42
4. Now that it's possible for you to specify an amateur radio club to adopt your callsign as its club call upon your death, will you consider doing so?
  - Definitely, yes.....43
  - Probably .....44
  - Probably not .....45
  - I don't even want to think about it.....46
5. The new rules allow a VE team to not publicize the time and location of upcoming license sessions. Do you think this will help or hurt the process of licensing new amateurs?
  - Will help.....47
  - Will hurt .....48
  - Will have no impact .....49
  - Don't know .....50
6. The new rules open the door for anyone who previously held a license that required a code examination to claim code credit when applying for a new or upgraded license with a code requirement. Will this change have an effect on you or on anyone you know? (Choose all that apply.)
  - It will help me personally .....51
  - It will help someone I know .....52
  - It will not affect me or anyone I know .....53
7. If you or someone you know is involved in weak-signal VHF/UHF operation, how do you feel about the effects of the new rules permitting spread spectrum operation on the 222-225 MHz band?
  - I don't think it will harm weak signal VHF/UHF operation.....54
  - Spread spectrum is already harming weak signal operation above 420 MHz; this will only make matters worse.....55
  - I don't know anyone who might be affected either way.....56
  - I don't know enough about spread spectrum to voice an opinion .....57
8. The new rules rescind the requirement that commercially manufactured HF amplifiers, when shipped, cannot function on the 12 and 10 meter bands. This requirement was put in place to prevent HF amateur radio linear amplifiers from being illegally used on 27 MHz CB. Do you think the new rules (which stipulate that amplifiers may not operate between 26 and 28 MHz and may not be easily modified to do so) are nonetheless likely to result in abuse by CB operators?
  - Yes, CBers will find and exploit every loophole they can.....58
  - No, the potential problem was seriously overstated all along .....59
  - No, I think the new rules are carefully designed to prevent abuse.....60

Thank you for your responses. We'll be back with more questions next month.

# Tell "Santa" you want a Holiday Gift that Keeps Giving, Receiving and Transmitting!

*The ARD9000 Mk2 and ARD9800 are both great gifts because there's "no assembly required" to start having fun. No radio modifications are necessary and it works with any brand of transceiver.*



Clip this ad and leave it for your favorite "elf" to find.

***It's like adding a whole new mode to your HF operation without needing a new radio!***

*With a few quick connections, you can be part of the digital voice excitement that's sweeping the SSB bands. Once you hear the audio quality, you'll be a believer! Whenever these digital voice modems are demonstrated, looks of amazement pass through the crowds.*

*Using the open G4GUO protocol, the ARD9000 Mk2 or ARD9800 allows any ham to convert an existing HF analog transceiver to work digital voice in one easy step! The unit automatically detects digital signals and decodes them, but you also maintain full analog capabilities. Whether a contact comes in as digital or analog, the ARD9000 Mk2 and ARD9800 can handle it.*

*It's a real breakthrough in communications technology that uses the same audio frequencies (300 Hz ~ 2500 Hz) as microphone audio to transmit digital SSB voice signals.*

*'Tis the season to help your favorite ham (even if that's yourself) enjoy the clean, clear audio that makes HF digital so much fun!*

- NO transceiver modifications necessary
- Digital voice communications using existing analog transceivers
- Works on Single Side Band (SSB) mode.
- Automatic digital receive
- Optional interface cables for most popular transceivers
- Built-in high grade Vocoder (AMBE)
- Built-in FEC protocol
- Compact unit. Easy to operate.
- Utilizes a uniquely designed high performance DSP engine
- Uses the established G4GUO open protocol
- ARD9800 can also be used for digital slow scan TV and data transmissions (images require optional memory board)

*Be sure to check the website at [www.aorusa.com](http://www.aorusa.com) for FAQs, links to user groups and more!*

**Special Purchase Discounts Available for Ham Radio Clubs!**



Authority on Radio Communications

AOR U.S.A., Inc.  
20655 S. Western Ave., Suite 112, Torrance, CA 90501, USA  
Tel: 310-787-8615 Fax: 310-787-8619  
info@aorusa.com <http://www.aorusa.com>

*Specifications are subject to change without notice or obligation*

## FCC Creates Public Safety and Homeland Security Bureau

**O**n Monday, August 29, 2005, Hurricane Katrina struck the Gulf Coast, killing more than 1800 people and causing some \$80 billion in damages, making it the costliest natural disaster in U.S. history. Parts of Alabama, Mississippi, and Louisiana had no power, no drinking water, widespread flooding, limited shelter and food and medical care, heavy looting, and tens of thousands of homes were demolished. Hurricane Katrina destroyed roads, bridges, and causeways, or made them impassible because of fallen trees and debris.

Millions of telephone lines and more than a thousand wireless cell sites were knocked out. Emergency communication by first responders was extremely difficult or non-existent. Radio-system towers and repeaters that survived the hurricane went silent when backup electricity generators failed. With electricity out region-wide, emergency workers could not recharge the batteries in their two-way radios.

To make matters worse, fire, police, ambulances, and other rescue services and relief workers all used different radio systems and could not talk to one another. In many cases, ham operators linked them.

With power and communications lines down, ham radio operators by the hundreds converged on the Gulf Coast. The federal government, through its Corporation for National and Community Service (CNCS), provided a \$100,000 grant to the ARRL to support emergency amateur radio operators in states affected by Hurricane Katrina.

Ham operators worked side by side with the Red Cross, food banks, hospitals, shelters, the Salvation Army, the National Weather Service, and other relief and rescue organizations to provide emergency communications. Many set up portable HF radio stations in the disaster area to transmit and receive health-and-welfare messages for individuals wishing to get messages through to concerned families. Amateurs had the ability to set up communications systems quickly and then effectively communicate using them.

Criticism of government reaction to the storm was widespread and resulted in an investigation by the United States Congress and the resignation of FEMA head Michael Brown. A Bipartisan Committee Report called the ability of local, state, and federal governments to effectively prepare for, and respond to, natural or man-made disasters such as Katrina "a failure." Inadequate communication ability was a main culprit.

A month after the Hurricane Katrina disaster, FCC Chairman Kevin J. Martin appeared before the House Subcommittee on Telecommunications and

announced his intention to take steps to improve communications among first responders during disasters. He confirmed that he would be creating a new FCC bureau to better coordinate the agency's disaster planning and response efforts.

A special independent panel was formed to examine emergency issues and to make recommendations that, among other things, eventually included support for the new bureau's establishment and mission.

On September 25, 2006, Martin made good on that promise. The new Public Safety and Homeland Security Bureau consolidates all of the FCC's public safety, national security, and disaster management policy making, planning, and outreach activities into a single top-level department. Previously, responsibility was shared among many different offices and bureaus. The FCC Office of Homeland Security was one of them.

In a statement, FCC Chairman Martin said, "The events of September 11, 2001 and last year's hurricane season underscored our dependence on our national telecommunications infrastructure." He emphasized that "...the new bureau's coordinated efforts with the public safety community, other governmental agencies, and industry should also promote reliability, interoperability, redundancy, and rapid restorability of the nation's critical communications infrastructure."

One idea being considered is the creation of an internet-based "network of networks" which would allow communications among emergency responders using different radio systems. Another is making greater use of satellite technology that does not depend on vulnerable ground infrastructure.

The new bureau's mission is to ensure that the nation is better prepared to respond to future natural disasters and national crises. The agency will do this by developing plans, policies, and rules that promote reliable communications among first responders, law enforcement, and emergency personnel, as well as consumers in need.

The new restructuring adds a seventh principal "bureau" unit to the Commission organization. The new Public Safety and Homeland Security Bureau essentially appears to be an elevation of the FCC's Office of Homeland Security to bureau status. Previously, that office was part of the FCC's Enforcement Bureau. It also brings together the public safety functions that had been dispersed among other bureaus and offices.

Twenty-eight-year FCC veteran Ken Moran, who directs the Office of Homeland Security, will be its initial acting chief. He will remain in that position until a permanent bureau chief is named. Public Safety licensing and related activities, previously handled by the Wireless Telecom Bureau, are being shifted to the new bureau, along with WTB Division Chief Michael J. Wilhelm, WS6BR.

\*1020 Byron Lane, Arlington, TX 76012  
e-mail: <w5yi@cq-amateur-radio.com>

A new Part "0" Subpart "A" has been added to the FCC's organizational structure to spell out the functions of the new bureau. It is very lengthy, but basically, the Public Safety and Homeland Security Bureau makes recommendations to the Commission "...in matters pertaining to public safety, homeland security, national security, emergency management and preparedness, disaster management, and ancillary operations." It also develops all FCC goals and regulations and plans to promote effective and reliable public safety, security, and emergency communications.

While details of the staffing and organization of the new bureau are not fully known at this point, we understand it will have 90 employees reassigned from other FCC departments. They will be organized into three divisions: Policy, Public Communications Outreach & Operations, and Communications Systems Analysis.

The Policy Division will develop rules, regulations, and policies and handle police, fire department, and other public safety licensing and related activities. It will also take the lead in overseeing the 800-MHz rebanding process and making additional spectrum available to public safety. The primary intent of the 800-MHz program is to eliminate interference caused by adjacent cellular-telephone networks to public safety and other commercial radio systems by relocating to new frequencies.

The Public Communications Outreach & Operations Division will be the lead division responsible for coordinating the FCC's emergency response procedures and operations. It will also operate the FCC's 24/7 Communications Center and High Frequency Direction Finding Capability.

The Communications Systems Analysis Division will collect outage data and analyze public safety, homeland security, national security, disaster management, and related information. The budget for the new bureau will involve reallocating existing FCC resources rather than seeking new funding.

The new bureau is also authorized to declare that a temporary state of communications emergency exists on Amateur Service spectrum as per Section §97.401(b) and to determine the operation of amateur stations during the emergency. Previously, requests for such a declaration were directed to, and declared by, the FCC district office in the area concerned.

Commissioner Michael Copps said his "...hope is that when we look back on this proposed reorganization years

down the road, it will be seen as the first step in putting the FCC out front, where it long should have been, in providing communications security for all Americans in this dangerous age. It's been five years since the tragedy of 9/11 and we know this: America is not as ready as it could be for the next attack should that awful day come, and many experts believe it will indeed come.

"This reorganization, once put in place, provides a framework for action. It is an important first step. We should have taken it years ago. But now the task

is to move forward, because there is such an incredible amount of work to do and because we are talking about challenges to our very safety and survival."

73, Fred, W5YI

#### Phone Band Expansion

The FCC's ruling on expanded HF phone bands was announced just before press time. W5YI will have complete details on the FCC Report and Order in next month's "Washington Readout" column.

## Alpha Delta Communications, Inc.

It's What's up HERE that Counts! Alpha Delta Communications Antennas are **Strong Links to Great Signals and Great DX!**



You can run 10 watts or 1 kW, but the KEY to performance is choosing an efficient, well designed antenna! And tens of thousands of ALPHA DELTA DX series HF antennas later, used in all continents by hams, embassies and the military, ALPHA DELTA is YOUR key to working lots of great stuff, whether DX, regional or local. They are now made in our ISO-9001 certified production facility for the highest quality ever! They are RUGGED!

Stainless steel hardware, Model SEP gas tube static modules in dipoles, efficient ISO-RES inductors for multi-band operation and insulated high tensile strength solid copper 12 ga. wire are used for severe weather rated applications. Rated 1 kW. Check our WEB site or your dealer catalog for a complete list of all models.

Here are some of the most popular:

- **Model DX-CC**, 80-40-20-15-10 meters, 82 ft. long parallel dipole ..... \$160.00 ea.
- **Model DX-DD**, 80 and 40 meters, 82 ft. long single wire dipole ..... \$130.00 ea.
- **Model DX-EE**, 40-20-15-10 meters, 40 ft. long parallel dipole ..... \$140.00 ea.
- **Model DX-LB**, 160-80-40 meters, 100 ft. long single wire dipole\*\* ..... \$160.00 ea.
- **Model DX-A**, 160-80-40 meters, quarter wave twin sloper\* (67 & 60 ft.) ..... \$100.00 ea.
- **Model DX-B**, 160-80-40-30 meters, quarter wave single wire sloper\* (60 ft.) ..... \$110.00 ea.

\* Slopers have unique installation requirements for proper tuning. See details on our WEB site.

\*\* Check our WEB site for SWR bandwidths on Model DX-LB.

Prices are plus \$8.00 ea. shipping/handling in the U.S. Check for export quotes.

**Toll Free Order Line (888) 302-8777**

(Add \$8.00 for direct US orders. Exports quoted.)

**ALPHA DELTA COMMUNICATIONS, INC.**

AA

[www.alphadeltacom.com](http://www.alphadeltacom.com)



P.O. Box 620, Manchester, KY 40962  
(606) 598-2029 • fax (606) 598-4413



# Holiday Fun QRP Style

Seasons Greetings, friends! Are you ready for some good high-tech—err... QRP tech—holiday fun? Think milliwatting and read on. Why milliwatting? It is the ultimate form of QRP, the gear is quite small, and much of it also becomes QRP classics. Making contacts while running only milliwatts of power also marks you as a sharp operator while possibly qualifying you for the famous 1,000 Mile Per Watt Award (details are at <[www.qrparci.org](http://www.qrparci.org)>). I should also point out that just reading about milliwatting or hearing someone else talking about milliwatting never compares to the adrenalin-pumping exhilaration of accomplishing it yourself. It is like (or better than!) working a world-class DXpedition right through a huge pile-up or winning a small lottery. As the Rolling Stones would say, "It's a gas, gas, gas!" In light of that fact and realizing that true QRPers need a little milliwatting action every now and then, two new and exciting kits you can order and build right now (plus a special treat for our "plug and play" friends) are the focus of this month's column. They all are winners and they are all QRP priced!

## The TT2 Lives On

If there is one homebrew item that is recognized both nationwide and worldwide as a true symbol of QRP, it is the late Doug DeMaw, W1FB's famous Tuna Tin 2 Transmitter. Indeed, many serious QRPers have at least one of these little gems on the desk or on a wall shelf of their home sta-

\*3994 Long Leaf Drive, Gardendale, AL 35071  
e-mail: <[k4twj@cq-amateur-radio.com](mailto:k4twj@cq-amateur-radio.com)>

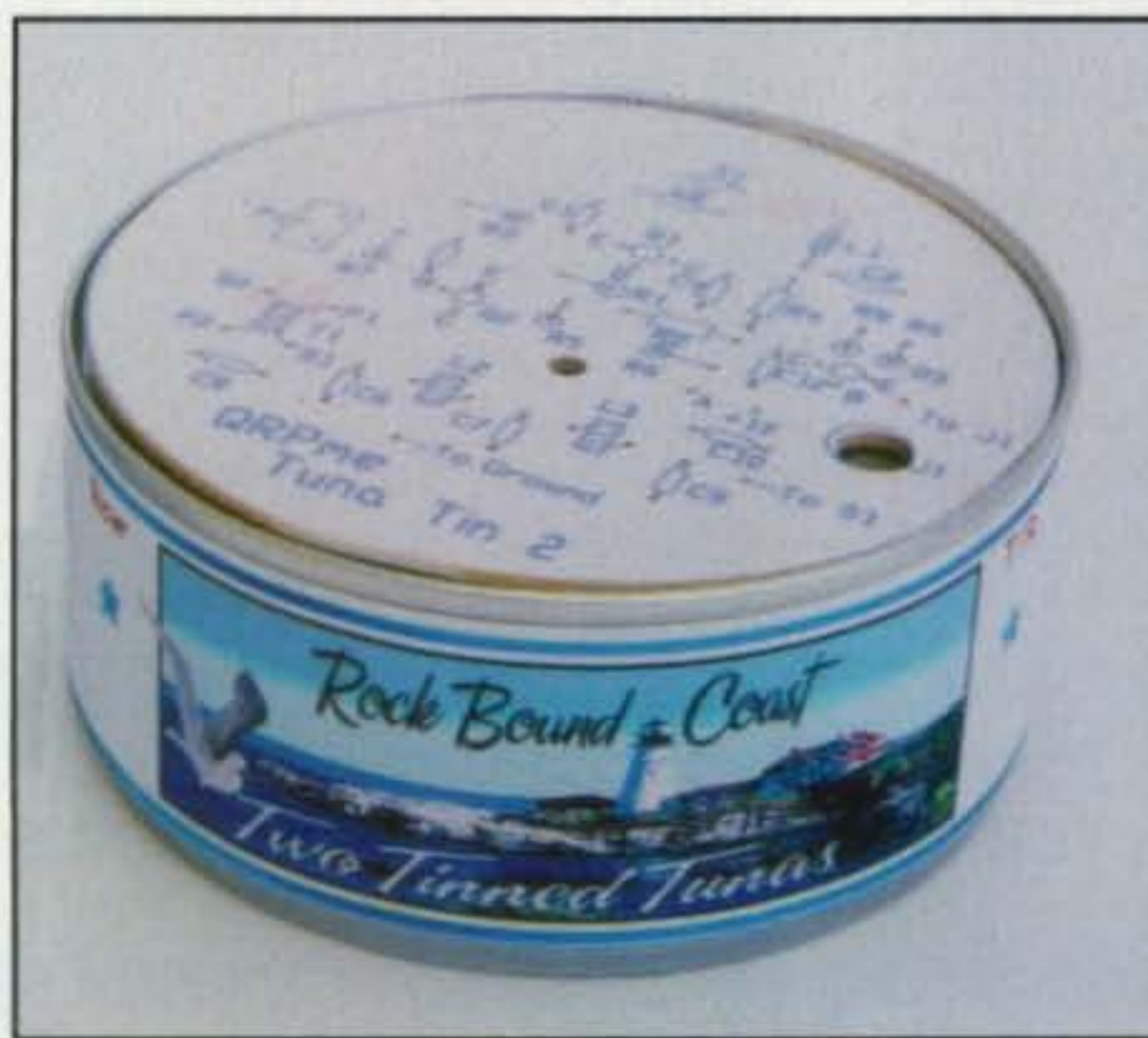


Photo 1— The new Tuna Tin 2 QRP transmitter kit from W1REX is shipped with all its parts, sockets, and switches packed in its own custom-labeled pull-top tin. Other unique tin labels plus the TT2's instruction/assembly manual can be downloaded from <[www.QRPme.com](http://www.QRPme.com)>.



Photo 2— Three more kits/kit-building packages sealed in tuna-type tins with unique labels are also available from W1REX. The Manhattan Chowder Tin, Island Cutter Tin, and Zomboids Tin include paddy boards, PC islands, and PC-board material for homebrewing your own projects "Manhattan construction style."

tion. I have had two or three of them myself. Somehow I lose one every time I move QTH, and losing one is like losing a good friend, so I always end up building another one. It is a mini-rig that just keeps going and going, and getting reincarnated time and again. The original version held its place for many years, and then Doug Hendricks, KI6DS, and friends updated its circuitry and NorCal offered updated kits—around 1999, as I recall. Two or three years later, it was passed over to the New Jersey QRP Club, then it went to the American QRP Club and later the Ft. Smith QRP Club (have I left anyone out?). Most recently, Rex Harper, W1REX, has picked up the ball—err... tin—and he has definitely taken this thing to the next level. In addition to updates and mods (like

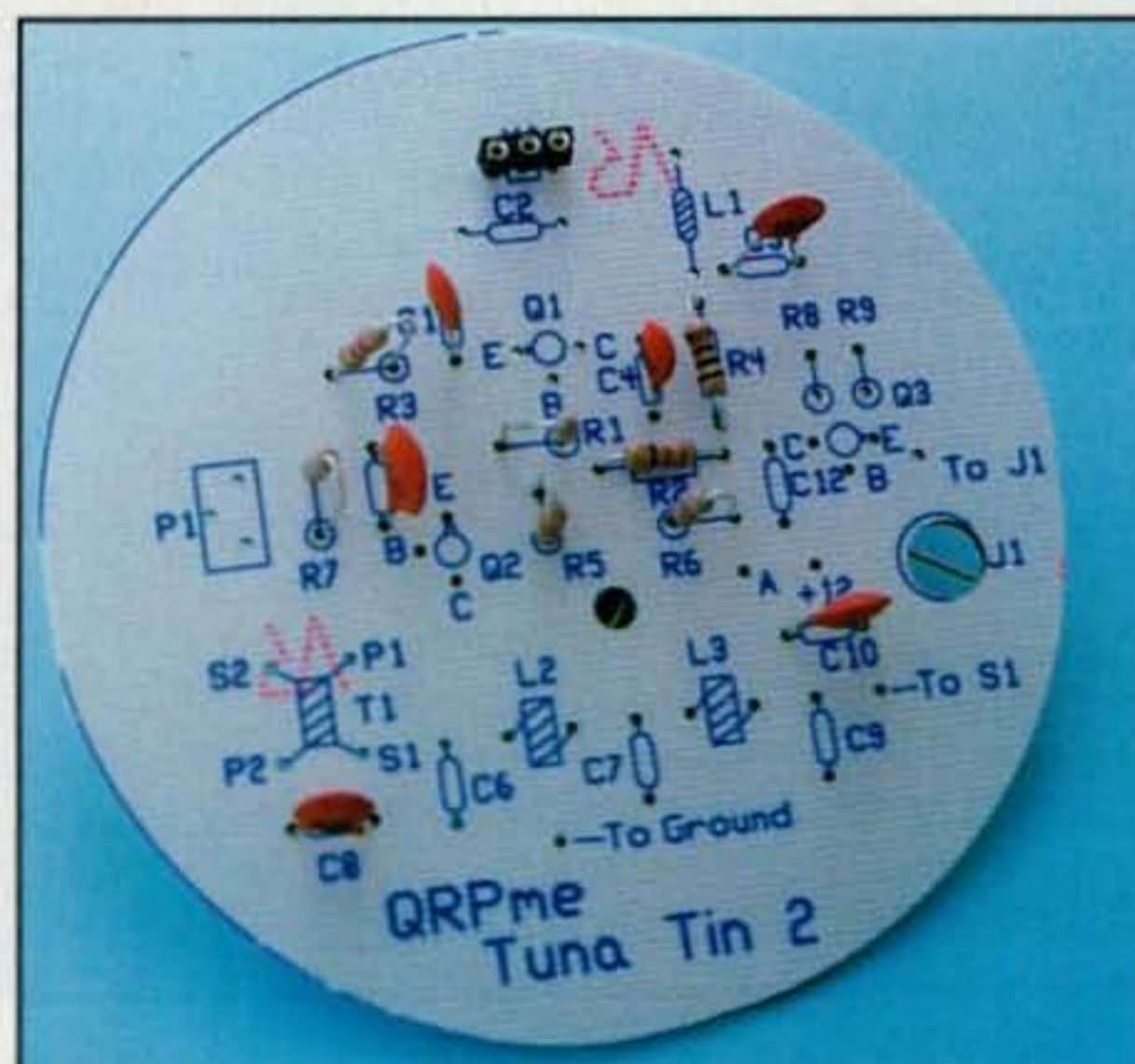


Photo 3— Assembly of the Tuna Tin 2 gets under way. The board is roomy and well marked, making assembly rather easy. It is an ultimate compliment to original designer and QRPer extraordinaire Doug DeMaw, W1FB. Nice!



Photo 4—The completed Tuna Tin 2 is a novel conversation piece. My first contact with it was a station in New Jersey, which is not shabby for 350 mw. Where else could one find such fun for less than 20 bucks?

improved keying and adjustable output), "TT2" kits are now packed in their own sealed tin, complete with top pull tab (photo 1). Everything needed is included in the tin: small parts, toroids, wire, connectors, T/R switch, solder, etc., and an elaborate assembly guide with step-by-step instructions. Also, pictures can be downloaded from the <W1REX/QRPme> website. Nice! The round Tuna Tin 2 PC board is also included, but placed atop the can. That's because Rex's canning machine adds a lip to hold the PC board in place so it does not fall in as it did on an original StarKist® can.

The sealed pop-top can is only part of the surprise. A custom "Rock Bound Coast—Two Tinned Tunas" label complete with ingredients (transistors, resistors, capacitors, wire, etc.) and nutritional facts (no edible products inside) make it an eye-catcher. And if that is not sufficient, other labels of different things—even a dual-frequency (7.040/7.030 kHz) indicating label—are available for customizing your tin.

But wait! Is 350 or 400 mw of Tuna Tin 2 power enough for wrangling some good QSOs? Absolutely! Look back at the October QRP column and read the part about NM3B in Pennsylvania working G4PBK in England with a Tuna Tin 2. Remember what we have emphasized in past QRP columns: A little QRP goes a long way, and the operator rather than the rig makes the difference!

W1REX decided to go a few steps further after developing the new Tuna Tin 2 kit packages, so he now offers three more kits—and a couple of additional treats are in the works (photo 2). First is a Manhattan Chowder kit (also packed in a Tuna-size pop-top tin). It includes DIP IC and surface-mount "paddy boards" for mounting ICs, strips of PC stock for making rectangular pads, a round tuna-can-size PC board, and extra PC board material for constructing TT2 accessories "Manhattan style."

Next is an Island Cutter kit containing most of the Manhattan Chowder parts plus two diamond-coated core drills for cutting those little round island pads like those introduced a few years ago by The New Jersey QRP Club. Another is the Zomboids Kit. The name was derived from the NorCal

Zombies and Altoids® tins. It includes parts/items like a Manhattan Chowder kit, but substitutes a Zomboids Mint tin and a custom-cut PC board that fits perfectly in a Zomboids or Altoids® tin. It, too, is a real attention grabber. In fact, just reading the tin's lid is a hoot. Other kits in development include an antenna tuner and a mating British-designed "Sudden" Receiver, also in a tuna tin. Round-case mini rigs are addictive!

You can learn more about the new Tuna Tin 2 kits, additional labels, and Manhattan-style construction kits (you lay out and wire up your own projects with them, etc.) by contacting Rex at QRPme, P.O. Box 160, Limerick, ME 04048, via <www.megalink.net/~w1rex/QRPme>, or you can e-mail Rex at <w1rex@megalink.net>. Check them out!

### New DC-40 Deluxe Mini Transceiver Kit

NorCal's famed project kitter, Doug Hendricks, KI6DS, and well-known circuit designer Steve Weber, KD1JV, recently combined efforts, and the result is a new mini transceiver kit called the DC-40 Deluxe. This new starlet sports a high-performance 2007-grade direct-conversion receiver and crystals for operation on 7.040 or 7.030 MHz, and pumps out a clean 750-mw signal when powered by a 12-volt battery or slightly more than 1 watt when operated from a 13.8-volt DC source. It is top notch all the way with a fully labeled PC board and plated through holes, and being true QRP, it fits perfectly in an Altoids® tin.

As originally designed, the DC-40 Deluxe is a single-frequency transceiver with an approximate 600-Hz shift or offset on transmit. NorCal QRPers are relentless modifiers, however, so they have already formed a Yahoo mod group,

## What makes this clock unlike any other clock in the world?



### The difference is night and day.

While some clocks claim to offer world time, only **GEOCHRON®** shows you complete global time—in vivid color.

Its everchanging, illuminated map actually replicates the earth's rotation—allowing the **GEOCHRON** to accurately depict sunrise and sunset, the sun's declination and meridian passage, along with the time, day and date anywhere on the planet.

It's a true global time indicator. And, it's like nothing you've ever seen. For sales and service information on this incredible time-keeping device, contact:

**GEOCHRON Enterprises, Inc.**

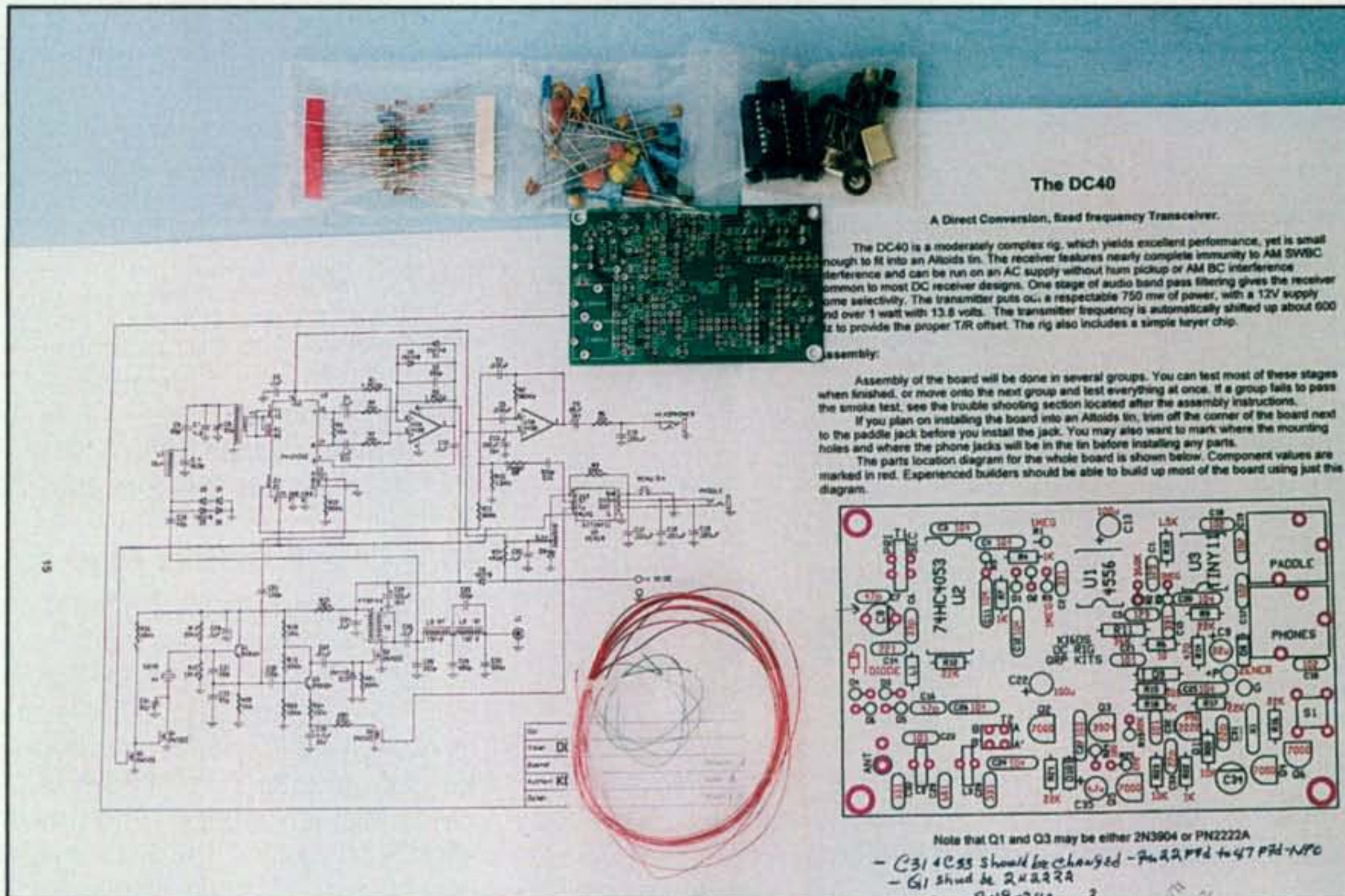
899 Arguello St., Redwood City, CA 94063-1308 USA

Tel: (650) 361-1771 Fax: (650) 361-1780 E-mail: sales@geochronusa.com

TOLL FREE 1-800-342-1661

For a complete list of dealers, view our website@www.geochronusa.com

Photo 5— The DC-40 Deluxe mini transceiver kit as received and unpacked. Resistors, diodes, and capacitors are in two sealed packs; toroids, sockets, and solid-state devices are in another plastic pack; and PC board plus coiled wire are in the box. The accompanying instruction manual is downloaded from <www.qrpkits.com>.



and the first mod is VXO control for mild frequency agility (one trimmer does it; see <www.groups.com/group/dc40> kits for details).

The big attraction of this little rig is its new millennium circuit design. It is clean and clever, and I would guess it will become a trendsetter for many other mini rigs. Rather than using a traditional NE-602/LM-386 receiver arrangement, the DC-40 Deluxe employs a 74HC4053 analog multiplexer IC as a mixer. Analog switches within the "4053" connect its output load resistor

[www.MorseX.com](http://www.MorseX.com)



Everything for the Morse Enthusiast!  
 KEYS      KEYERS      BOOKS  
 PADDLES      KITS      TOOLS  
 BUGS      SOFTWARE      PARTS

HUGE SELECTION • FREE CATALOG



Christmas  
 2006  
 Gold plated solid brass  
 miniature key  
 \$69.<sup>95</sup>

Milestone Technologies Inc  
 10691 E Bethany Dr Ste 800 Aurora CO 80014

1-877-DOT-DASH

**Group 1: Power, Audio and Keyer stages.**

Part #	value	markings
R10	1.5K	BRN/GRN/RED
R9	22K	RED/RED/ORG
R14	470 Ohm	YEL/VOL/BRN
R6	10 Ohm	BRN/BLK/BLK
R11	36K, 1%	ORG/BLU/BLK/RED
R2	360K, 1%	ORG/BLU/BLK/ORG
		BRN/BLK/GRN
		ZENER
		Schottky
		102 DISC
		102 DISC
		102 DISC
		102 DISC
C9, C13		The long lead is +, neg lead side marked with black strip on body of cap.
C20	.1u	104 mono
C15	330p	331 DISC or (mono)

**NOTES:**  
 Be sure to correctly identify the other glass diodes, but the 1N4148 diodes are tan.  
 R2 and R11 are 1% resistors. Use color bands for the value, instead of resistors. They also have tan.

Do not install the ICs into the sockets until after the

Photo 6— Taking time to shoot this "midway of assembly" picture while dropping in parts and soldering like crazy was difficult, but we are sure you will enjoy the "build along with Dave" flavor.

across its input circuit at a high speed (the local oscillator signal's frequency, to be specific), and the phase of the incoming 40-meter signal is switched on each half cycle of the local-oscillator signal. As a result of this high-speed multiplex switching, the local-oscillator signal is mixed with the incoming signal and a different signal (audio) is produced at the output load resistor. The multiplexer is followed by a high-gain

differential audio amplifier, another analog switch for transmit muting, and then goes to a single-section audio bandpass filter and on to the earphone. Using an analog multiplexer as a mixer, incidentally, noticeably improves receiver performance; it is basically immune to AM and shortwave broadcast band interference. The transmitter section consists of a 2N3904 oscillator, 2N2222 driver, and 2N7000 final ampli-



# TOKYO HY-POWER

## HL-1.5KFX

### HF/50MHz Linear Power Amplifier

**STOP  
THE  
PRESS!**

*HL-1.5KFX complies with  
new FCC rules now selling  
with 12m and 10m operation  
without modification!*

**NEW!**



**Auto Band Set**

This compact and lightweight 1kW desktop HF/50MHz linear power amplifier has a maximum input power of 1.75kW. Our solid-state broadband power amp technology makes it the smallest and lightest self-contained amplifier in the industry.

Typical output power is 1kW PEP/SSB on HF and 650W on 6m band with the drive power of 85-90W. Bands set automatically with the **built-in band decoder**. You can forget about the band setting when the amplifier is connected to your modern radio through **supplied band data cables for ICOM CI-V, DC voltage (ICOM, Yaesu), and RS-232C (Kenwood)**. Manual band setting selectable as well.

All these data cables are included with the amplifier.

#### Features

- Lightest and most compact 1kW HF amplifier in the industry.
- The amplifier's decoder changes bands automatically with most ICOM, Kenwood, Yaesu.
- The amp utilizes an advanced 16 bit MPU (microprocessor) to run the various high speed protection circuits such as overdrive, high antenna SWR, DC overvoltage, band miss-set etc.
- Built in power supply.
- AC 230V (200/220/240V) default and AC 115V, (100/110/120V) (selectable).
- Equipped with a control cable connection socket, for the upcoming model HC-1.5KAT, auto antenna tuner by Tokyo Hy-Power Labs. (To be announced in early 2007).
- Two antenna ports selectable from front panel.
- Great for desktop or DXpedition!

#### Specifications

**Frequency:**

1.8 - 28MHz all amateur bands including WARC bands and 50MHz (US model covers 1.8 - 21MHz per FCC regulations). Restorable with proof of license.

**Mode:**

SSB, CW, RTTY

**RF Drive:**

85W typ. (100W max.)

**Output Power:**

HF 1kW PEP max., 930W CW (typ.)  
50MHz 650W PEP max.

**Matching Transceivers for Auto Band Decoder:**

Most modern ICOM, Yaesu, Kenwood

**Drain Voltage:**

53V (when no RF drive)

**Drain Current:**

40A max.

**Input Impedance:**

50 OHM (unbalanced)

**Output Impedance:**

50 OHM (unbalanced)

**Final Transistor:**

SD2933 x 4 (MOS FET by ST micro)

**Circuit:**

Class AB parallel push-pull

**Cooling Method:**

Forced Air Cooling

**MPU:**

PIC 18F452 x 2

**Multi-Meter:**

Output Power - Pf 1Kw  
Drain Voltage - Vd 60V  
Drain Current - Id 50A

**Input/Output Connectors:**

UHF SO-239

**AC Power:**

AC 230V 200/220/240V - 10A max. (default)  
AC 115V (100/110/124V) - 20A max.

**AC Consumption:**

1.9kVA max. when TX

**Dimension:**

10.7 x 5.6 x 14.3 inches (WxHxD)/272 x 142 x 363 mm

**Weight:**

Approx. 20kgs. or 45.5lbs.

**Accessories Included:**

AC Power Cord  
Band Decoder Cables included for Kenwood, ICOM and Yaesu  
Spare Fuses and Plugs  
User Manual

**Optional Items:**

Auto Antenna Tuner (HC-1.5KAT) (Coming soon)  
External Cooling Fan (HXT-1.5KF for high duty cycle RTTY)



Available late November  
Exclusively from Ham Radio Outlet!

**www.hamradio.com**

Western US/Canada  
1-800-854-6046

Mid-Atlantic  
1-800-444-4799

Mountain/Central  
1-800-444-9476

Northeast  
1-800-644-4476

Southeast  
1-800-444-7927

New England/Eastern Canada  
1-800-444-0047

# TOKYO HY-POWER

TOKYO HY-POWER LABS., INC. - USA  
487 East Main Street, Suite 163  
Mount Kisco, NY 10549  
Phone: 914-602-1400

TOKYO HY-POWER LABS., INC. - JAPAN  
1-1 Hatanaka 3chome, Niiza Saitama 352-0012  
Phone: +81 (48) 481-1211 FAX: +81 (48) 479-6949  
e-mail: info@thp.co.jp  
Web: http://www.thp.co.jp

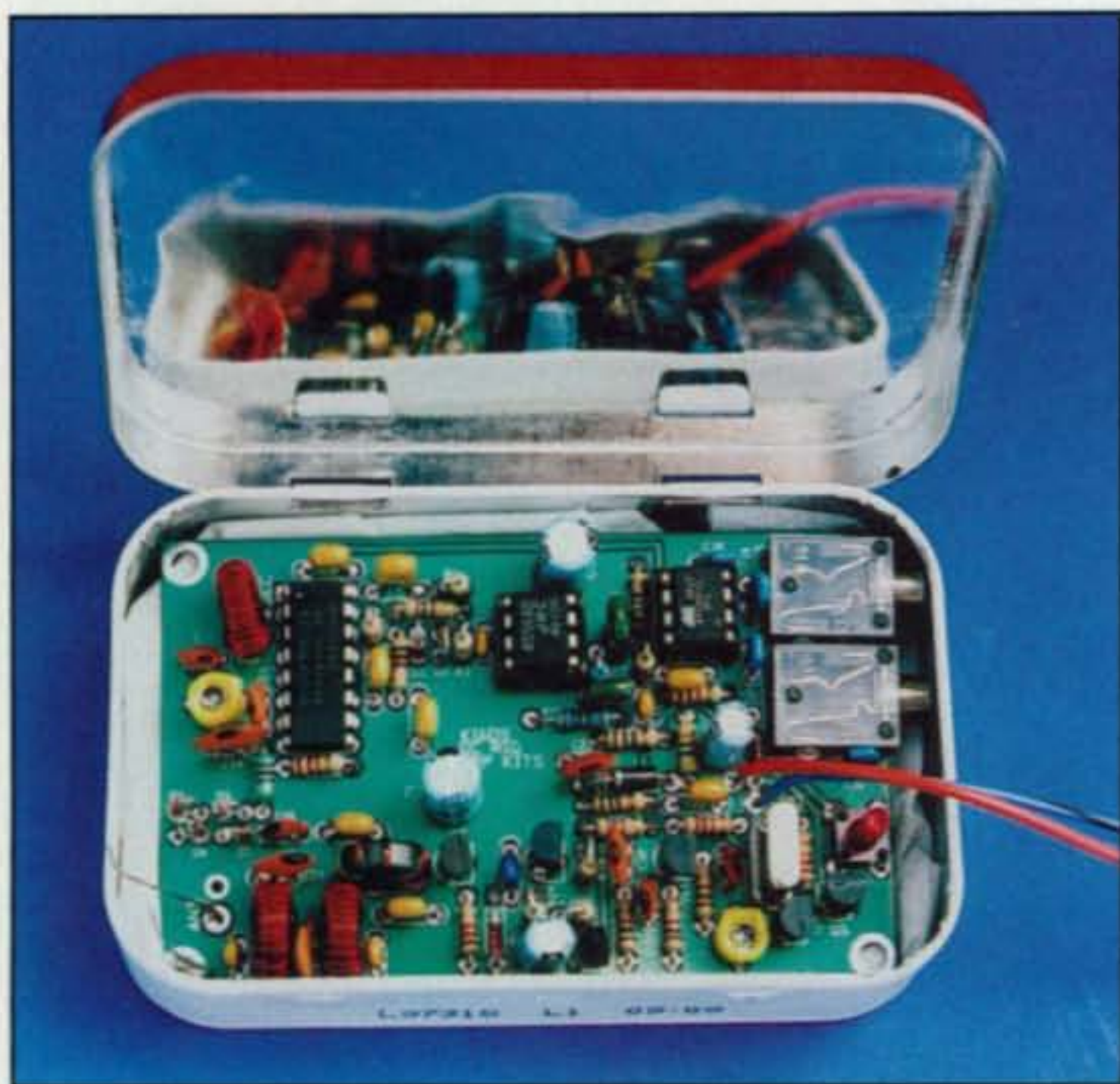


Photo 7— The completed DC-40 Deluxe fits snugly in an Altoids® tin and works like a champ. I put it on a small shelf by the rig and let it continuously monitor 7.040 kHz for QRP activity. I also find it handy for replying to CQs on the spot. It's available from Doug Hendricks, KI6DS, at <[www.qrpkits.com](http://www.qrpkits.com)>.

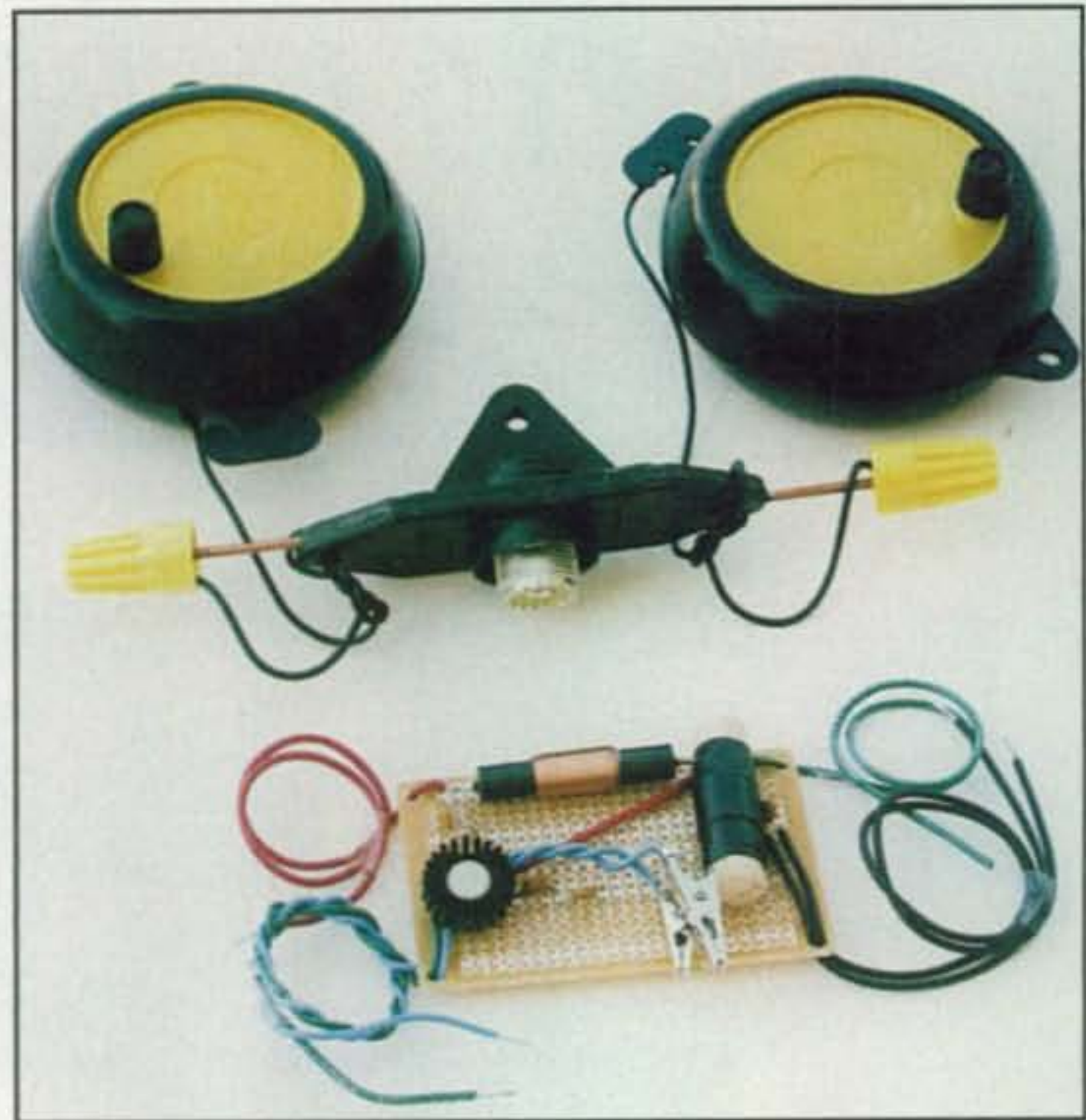


Photo 8— Like plug-n-play QRP? DWM Communications' Yo-Yo antenna quickly extends to produce a full-size dipole for operation on any band from 6 through 40 meters, and after adding a crystal of your choice, the preassembled Peanut Whistle 2 transmitter puts you on 40 meters QRP in a flash. The Peanut Whistle 2 is also offered free with a Yo-Yo 'Tenna this holiday season (see text).

fier. Also included is a "Tiny 11" keyer on a chip with push-button control for speed, tune mode, etc.

A completed DC-40 Deluxe can be fine-trimmed around one of the board's corners and slipped into an Altoids® tin, but it just does not compare to mounting it in a Zomboids tin sold as part of a Manhattan Chowder builder's pack by W1REX. Then when you show off your new goody, folks can spend as much time reading the tin's label as studying the rig's circuitry.

Operating the DC-40 Deluxe is also a gas, as its included single-section audio filter lets you hear stronger "opposite sideband" stations right along with on-frequency stations. The VXO mod offers some assistance in tuning "proper sideband" stations here. That is, you can judge sidebands by noting a signal's tone increases or decreases with (VXO) frequency changes.

I recently quickly assembled a DC-40 Deluxe and can report first hand it is a well-thought out kit that goes together beautifully. The kit is also complemented with a 16-page instruction/ assembly manual that you download from <[www.qrpkits.com](http://www.qrpkits.com)>. Kit assembly is broken down into five individual sections. You can build a section an hour, a section a day, or all five at once, as preferred or as spare time permits. You can also quickly check sections as you complete them or just check the full rig after complete assembly if you feel confident in your work (as Clint Eastwood/Dirty Harry would say "Do you feel lucky, kid?").

There are four toroid coils to wind in the DC-40 Deluxe, but wire is supplied and it makes a convenient diversion from the "inserting parts and soldering" process. Actually, when you think about kit building and consider that commercially produced gear is now assembled robotic-style using surface-mount components (and with new lead-deficient solder), building a mini rig yourself is a very special and commendable achievement. Homebrewing in the future may only consist of connecting boards and cables, like the way home com-

puters are built today. Can you imagine components with real wire leads and real solder ending up in museums? The embarrassment!

The DC-40 Deluxe kits are available right now from Doug Hendricks at <[www.qrpkits.com](http://www.qrpkits.com)> or KI6DS, 862 Frank Avenue, Dos Palos, CA 93620.

### Double Delight from DWM

Wrapping up this month's column are a couple of holiday treats for our plug-and-play friends from Bill, W8MEA, of DWM Communications (photo 8). First is the easy-up Yo-Yo antenna, which has approximately 35 feet of wire on each of its quick-wind Yo-Yos. The wires come together at a center SO-239 you can connect to your rig or via a length of coax cable as required. You then extend the wire-equipped Yo-Yos to make a half-wave dipole, secure the Yo-Yos by their hangers, and hit the band with a reasonably good signal. It is ideal for portable or emergency use, and a clever backup item for stormy weather.

Next is the pre-assembled and ready-for-use on 40 meters Peanut Whistle 2 transmitter. This gem typically runs 2 watts output when powered from a 13.5-volt DC source, but in keeping with this month's theme, you can power it from a 6- or 9-volt battery for milliwatt fun. It, too, is a handy item for portable and emergency use. The surprise is when you purchase a Yo-Yo 'Tenna this holiday season, DWM will give you the Peanut Whistle 2 free! More details (and the goodies!) are available at <[www.HamRadioFun.com](http://www.HamRadioFun.com)>. You can e-mail Bill, WA8MEA, at <[tinytenna@hotmail.com](mailto:tinytenna@hotmail.com)>.

That overflows column space this time, so we will quickly bow out with wishes of Happy Holidays to all!

73, Dave, K4TWJ

Proud to be  
"America's Most Reliable Amateur Radio Dealer"



**Burghardt** INC.  
**AMATEUR CENTER**

[www.burghardt-amateur.com](http://www.burghardt-amateur.com)

Featuring...



**YAESU**  
Choice of the World's top DX'ers™



**FTDX 9000**

A groundbreaking HF/50 MHz Elite Class Transceiver featuring unmatched close-in dynamic range, flexible selectivity choices due to its advanced 32-bit DSP filtering, a high-resolution TFT display, and high power: the 200-Watt "D" and "Contest" versions, as well as the 400-Watt "MP" version, are all available now!



**FT 2000**

The FT-2000 is the 2nd Generation in the proud lineage of the FTdx9000 Series! Featuring extensive DSP filtering, 100 Watts of power output, and a host of outstanding ergonomic and performance features, the FT-2000 is destined to be the centerpiece of your HF/50 MHz station!



**FT-897D**

The FT-897D is a rugged, innovative, multiband, multimode portable transceiver for the amateur radio MF/HF/VHF/UHF bands. Providing coverage of the 160-10 meter bands plus the 6 m, 2 m, and 70 cm bands, the FT-897 includes operation on the SSB, CW, AM, FM, and Digital modes.

**Need a Connector?  
Order the PL-259  
Our Hottest  
Selling  
COAX Plug!**



**FT-857D**

The FT-857D, the world's smallest HF/VHF/UHF mobile transceiver, provides base station-type performance from an ultra-compact package that's ideal for mobile or external battery portable work. Wide frequency coverage, outstanding receiver performance, and convenient, optional remote-head operation.

**Sales and Service – That IS Our Promise!**

Remember, we are here to help. If you have any questions about products or require technical assistance, please feel free to call or fax.

**— How to Reach Us —**



**Address**

710 10th Street SW  
PO Box 73  
Watertown, SD 57201

**Store Hours**

Monday - Friday  
9:00AM to 6:00PM  
Central Time  
Open on Saturday  
9 AM to Noon  
Central Time

**Technical & Product Information**

Phone: (605) 886-7314  
Fax: (605) 886-3444

**Sales/Ordering**

(800) 927-4261

**Email**

[sales@burghardt-amateur.com](mailto:sales@burghardt-amateur.com)

**Web**

[www.burghardt-amateur.com](http://www.burghardt-amateur.com)

**Serving Amateur  
Radio Operators  
Since 1937**

We offer TOP DOLLAR  
TRADE ALLOWANCES  
on late model HF,  
VHF, UHF and  
receiver equipment in  
good and clean  
condition.  
Call or write today!

# Wireless Local Area Network (LAN) Design

This time we'll move toward the practical considerations that need to be considered when building a wireless network. In the past, this column has discussed the design of such a network, but now I want to offer some specific suggestions as to hardware and configuration. We'll also take a look at a great book I recently received, a professional text on site surveying for 802.11 systems.

## Some History

Back in the days of numerous packet networks, we used to assemble stacks of Terminal Node Controllers (TNCs) using diode matrix boards or computers with multi-port RS-232 cards to create nodes, which were used as network switches to route connections across the network. Today, we can leverage the equipment available in the commercial sector to perform these functions at a much lower cost. The network model I'm suggesting looks like a wired network but uses wireless bridges to replace the ethernet wires that would normally connect together a number of network switches or hubs. The end result looks and acts much like a wired network.

## Get Wired

To build a wired network (fig. 1), we simply run to the computer or office supply store and pick up a wired ethernet switch or hub, which generally costs

under \$30. A switch uses the full bandwidth available for each single connection, while a hub shares the total bandwidth across all connections. Think of a hub as a radio channel with all users on the same frequency, while a switch is like each user having his or her own frequency, the switch connecting the audio between users as necessary.

We can also connect multiple switches to one another in order to make our wired network larger. I might use a 4-port switch to connect together four 8-port switches, allowing up to 28 computers ( $4 \times 8 = 32$  ports, but one port per switch is used to connect back to the 4-port switch, so  $32 - 4 = 28$  available ports) to be on the same network at one time. Of course, like any peer-to-peer network, you must know how to find the other computer(s) with which you wish to communicate, and those other computers must be set up to allow such communications.

## Going Wireless

We can use consumer-grade wireless devices to replace that piece of wire connecting an 8-port switch to the 4-port switch, resulting in a wireless link. At each network facility, add a wireless router to allow users to connect in, and you have a wireless data network. Yes, it's that simple.

You may have heard the terms *hub*, *switch*, *router*, and *bridge* used before (at least if you're a ham you might have!). I already explained what a hub and switch are. A router (which usually also has an integrated multi-port switch) allows you to communicate to another network (such as through a cable or DSL modem). The big advantage of a

\*P.O. Box 114, Park Ridge, NJ 07656  
e-mail: <n2irz@cq-amateur-radio.com>

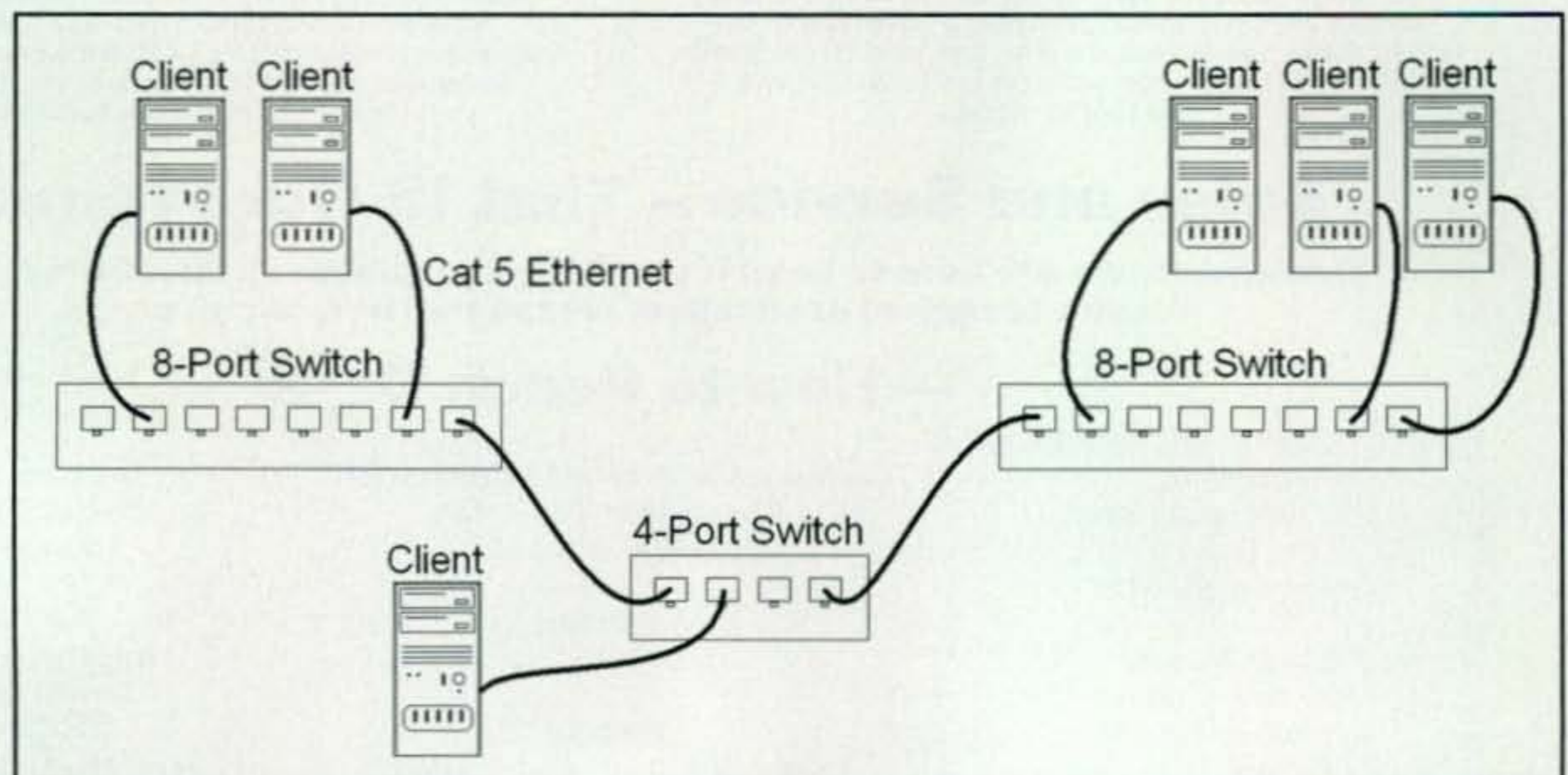


Fig. 1—A typical wired network, with a 4-port switch as its center and two 8-port switches to connect up to 16 client computers (only six are shown for simplicity) together in a wired Local Area Network, or LAN.

# AMERITRON 600 Watt no tune FET Amp

Four rugged MRF-150 FETs at 50 Volts give high efficiency... No deterioration with use



**ALS-600** Ameritron ALS-600 Solid State FET compact desktop station amplifier is only 4 dB below 1500 Watts -- less than an S-unit!

There are no tubes, no tube heat, no tuning, no worry rugged -- just turn on, select band and operate. 600 Watts PEP/500W CW -- lets you talk to anyone you can hear!

Covers 1.5-22 MHz, (10/12 Meters with \$29.95 kit, requires FCC license), instant band-switching, SWR/thermal protected, extremely quiet, lighted peak reading Cross-Needle SWR/Wattmeter, front panel ALC control, operate/standby switch. 12.5 lbs., 9 1/2" W x 7 1/4" H x 12 D in.

Includes ALS-600PS transformer AC power supply for 120/220 VAC, inrush current protected. 32 lbs., 9 1/2" W x 6" H x 12 D inches.

**ALS-600 Amp with Switching Power Supply** New! ALS-600S, \$1428. ALS-600 amplifier with 10 lb. ALS-600SPS switching power supply combo.

**Switching Power Supply** ALS-600SPS Works with all ALS-600 amplifiers. Extremely lightweight, just 10 lbs. Superb regulation, very low radiated noise. 9Wx6Hx14 1/2 D in.

From QST Magazine, March, 2005

"... the amplifier faulted only when it was supposed to. It protected itself from our boneheaded, sleep-deprived band changing maneuvers..."

"I found myself not worrying about damaging this amplifier. It seems quite capable of looking out for itself..." Kudos to Ameritron."

"I couldn't hear any noise at all from the SPS (switching power supply) on the vertical or quad..."

"I came to greatly appreciate the size, weight, reliability and simplicity of this amplifier."

"The ALS-600S makes it possible to pack a transceiver and a 600 Watt amplifier, that together weigh less than 30 pounds."

## AMERITRON mobile 500 Watt no tune Solid State Amp

Instant bandswitching, no tuning, no warm-up, SWR protected, 1.5-22 MHz, quiet, compact



Ameritron's ALS-500M solid state mobile amp gives you 500 Watts PEP SSB or 400 Watts CW output! Just turn on and operate -- no warm-up, no tuning, instant bandswitching. Fits in very small spaces.

New ALS-500RC, \$49 Remote Head lets you mount ALS-

**ALS-500M** 500M amplifier anywhere and gives you full control. Select desired band, turn On/Off and monitor current draw on its DC Current Meter. Has power, transmit and overload LEDs. RJ-45 cables plug into Amplifier/Remote Head.

Covers 1.5-22 MHz, (10/12 Meters with \$29.95 kit, requires FCC license).

Virtually indestructible! Load Fault Protection eliminates amplifier damage due to operator error, antenna hitting tree branches, 18-wheeler passing by. Thermal Overload Protection disables/bypasses amp if temperature is excessively high. Auto resets.

Typically 60-70 watts in gives full output. ON/OFF switch bypasses amplifier for "barefoot" operation. Extremely quiet fan comes on as needed. Excellent harmonic suppression, push-pull output, DC current meter. 13.8 VDC/80 Amps. 3 1/2" x 9" x 15 in. 7 lbs.

ALS-500M, \$849, 500 Watt mobile amp.

ALS-500MR, \$879, ALS-500M/Remote Head

ALS-500RC, \$49, Remote head for ALS-500M (for serial # above 13049).

ARF-500K, \$179.95, Remote kit for ALS-500M serial # lower than 13049. Includes AL-500RC Remote Head, filter/relay board for ALS-500M, cables, hardware, instructions.

Free online manuals! Ameritron brings you the finest high power accessories!

**ARB-704 amp-to-rig interface...** \$59<sup>95</sup>

Protects rig from damage by keying line transients and makes hook-up to your rig easy!

**RCS-4 Remote Coax Switch...** \$149<sup>95</sup>

Use 1 coax for 4 antennas. No control cable needed. SWR < 1.25, 1.5 - 60 MHz. Useable to 100 MHz.

**RCS-8V Remote Coax Switch...** \$159<sup>95</sup>

Replace 5 coax with 1! 1.2 SWR at 250 MHz. Useable to 450 MHz. < 1 dB loss, 1kW @ 150MHz.

**RCS-10 Remote Coax Switch...** \$169<sup>95</sup>

Replace 8 coax with 1! SWR < 1.3 to 60 MHz. RCS-10L, \$209.95 with lightning arrestors.

**New! RCS-12C Fully Automatic Remote Coax Switch Controller...** \$229<sup>95</sup>

Band data from transceiver auto selects antennas. Antenna memories. No hotswitching. Rig-to-amp interface. For 3/4 BCD, 1 of 8 relay boxes. RCS-12, \$299.95, auto controller with 8 coax relay box, to 60 MHz. RCS-12L, \$339.95, with lightning arrestors.

**AWM-30 Precision SWR Wattmeter...** \$149<sup>95</sup>

Active circuit gives true peak/average readings on lighted cross-needle meter. 3000/300 Watt ranges, Remote sensor.

**AWM-35 Flat Mobile SWR Wattmeter...** \$159<sup>95</sup>

1 1/2 in. thin on dashboard. Remote sensor, 25' cable. True peak, Cross-Needle, 1.5 kW, 1.8-30 MHz. High-SWR LED.

**ATP-100 Tuning Pulser...** \$59<sup>95</sup>

Safely tune up for full power, best linearity. Prevents overheating, tube damage, power supply stress, component failure.

**ADL-1500 Dummy Load with oil...** \$74<sup>95</sup>

Oil-cooled. 50 Ohms. 1500 Watts/5 minutes. SWR < 1.2 to 30 MHz. Low SWR to 400 MHz.

**ADL-2500 fan-cooled Dry Dummy Load...** \$199<sup>95</sup>

Whisper quiet fan, 2.5kW/1 minute on, ten off. 300W continuous. SWR < 1.25 to 30 MHz. < 1.4 to 60 MHz.

**SDA-100 Mobile Screwdriver Antenna**

\$379<sup>95</sup> 80-10M, fiberglass form, Pittman motor, CNC parts, magnetic sensors, #14 wire, 1.2 kW PEP. 6' whip, \$24<sup>95</sup>

**800 Watts... \$849** with four 811A tubes



AL-811H, \$849. Plugs into 120 VAC outlet. All HF bands. Hi-silicon transformer, heavy duty tank coils, tuned input, operate/standby switch, Xmit LED, ALC, lighted meters, 32 lbs. 13 3/4" W x 8" H x 16 D in. AL-811, \$699. Like AL-811H, but three 811A, 600 W.

**Desktop Kilowatt** with Classic 3-500G tube



AL-80B, \$1399. Whisper quiet 3-500G desktop amp gives full kilowatt SSB PEP output. Plugs into 120 VAC. Ameritron's exclusive DynamicALC™ doubles average SSB power out and Instantaneous RF Bias™ gives cooler operation. All HF bands. 48 lbs. 14Wx8 1/2" H x 15 1/2 D in.

**True Legal Limit™** with Eimac® 3CX1500/8877



AL-1500, \$3095. Ameritron's most powerful amplifier uses the herculean Eimac® 3CX1500/8877 ceramic tube. 65 Watts drive gives you full output power -- and it's just loafing because the power supply is capable of 2500 Watts pep. All HF bands, all modes. 77 lbs. 17Wx10Hx18 1/2 D inches.

**1500 Watt True Legal Limit™ Antenna Tuner**

ATR-30, \$599.95 • Super high current edge-wound silver plated roller inductor • 500pf capacitors • 6:1 reduction drives • 3 core current balun • 6 position antenna switch • True peak meter

Call your dealer for your best price!

Free Catalog: 800-713-3550

**AMERITRON**

... the world's high power leader!

116 Willow Road, Starkville, MS 39759  
TECH (662) 323-8211 • FAX (662) 323-6551  
8 a.m. - 4:30 p.m. CST Monday - Friday  
For power amplifier components call (662) 323-8211  
<http://www.ameritron.com>

Prices and specifications subject to change without notice. ©2006 Ameritron.

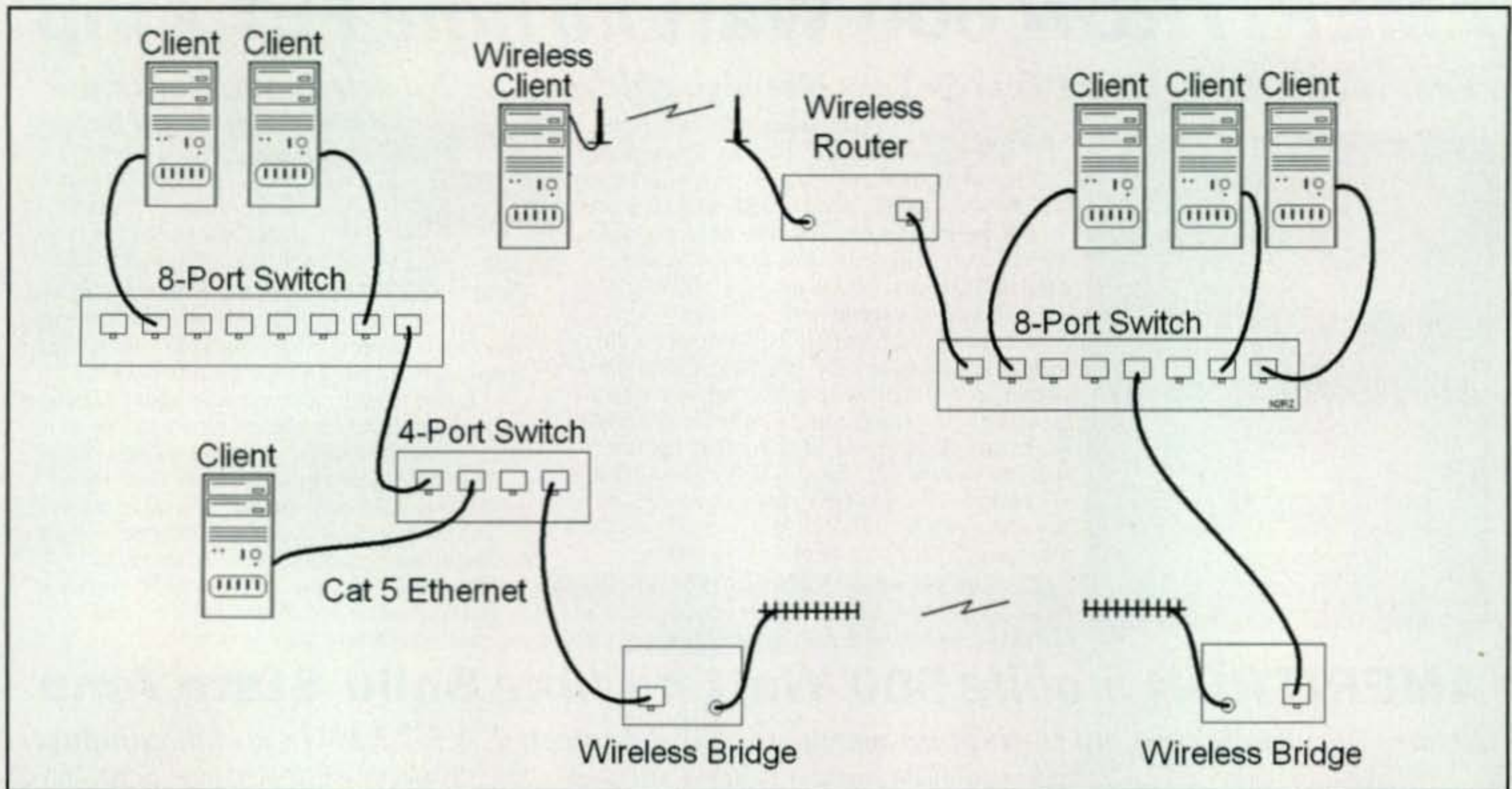


Fig. 2— The same network as in fig. 1, but with one switch connected via a wireless bridge link, as well as wireless router shown providing service to a wireless client. This forms a basic wireless network, which can be expanded as necessary.

**POWERPORT**

**RadioWallet travel case**

Keep your HT and it's accessories in one place and protected in this tough, padded case. Big enough for your radio, extra antenna, battery and charger along with your repeater book. Zippered case comes in two sizes to fit any HT.



800 206-0115 www.powerportstore.com

**NEW DX4WIN V7**  
*...the way logging software should be!*

DX4WIN – an easy to use, yet powerful logging program for every ham – now features direct support for MMTTY!

No longer do you have to work RTTY and log in separate applications. It can now ALL be done from within DX4WIN using all standard DX4WIN features.

**DX4WIN version 7, still only \$89.95**

Shipping: \$6.95 US/\$11 DX

Upgrades available for previous versions.

To order, or for more information, contact:

**Rapidan Data Systems**

PO Box 418, Locust Grove, VA 22508  
 (540) 854-9160

Email: support@dx4win.com

Free version 7.0 demo and secure online ordering at

**www.dx4win.com**

router is that it has DHCP; this means it can dynamically assign a TCP/IP address to a user joining the network, which is essential where you cannot or do not want to pre-configure all the network addresses.

A bridge, in contrast, is just a device to extend a network connection. It is completely transparent to the network, just like a piece of wire. Professional-quality wireless bridges can cost a few thousand dollars, but consumer-grade models can be found for under \$100 each.

I also want to mention that some wireless routers and access points have a bridge mode, which makes them act like a bridge. If you can find one, it makes a fine alternative to a dedicated bridge. Also, some of the modified firmware available from the resources listed in the sidebar with this article can add bridge capability to some of the really inexpensive consumer-grade wireless routers, making for an even bigger bargain.

Therefore, we simply replace the wires between the switches in our

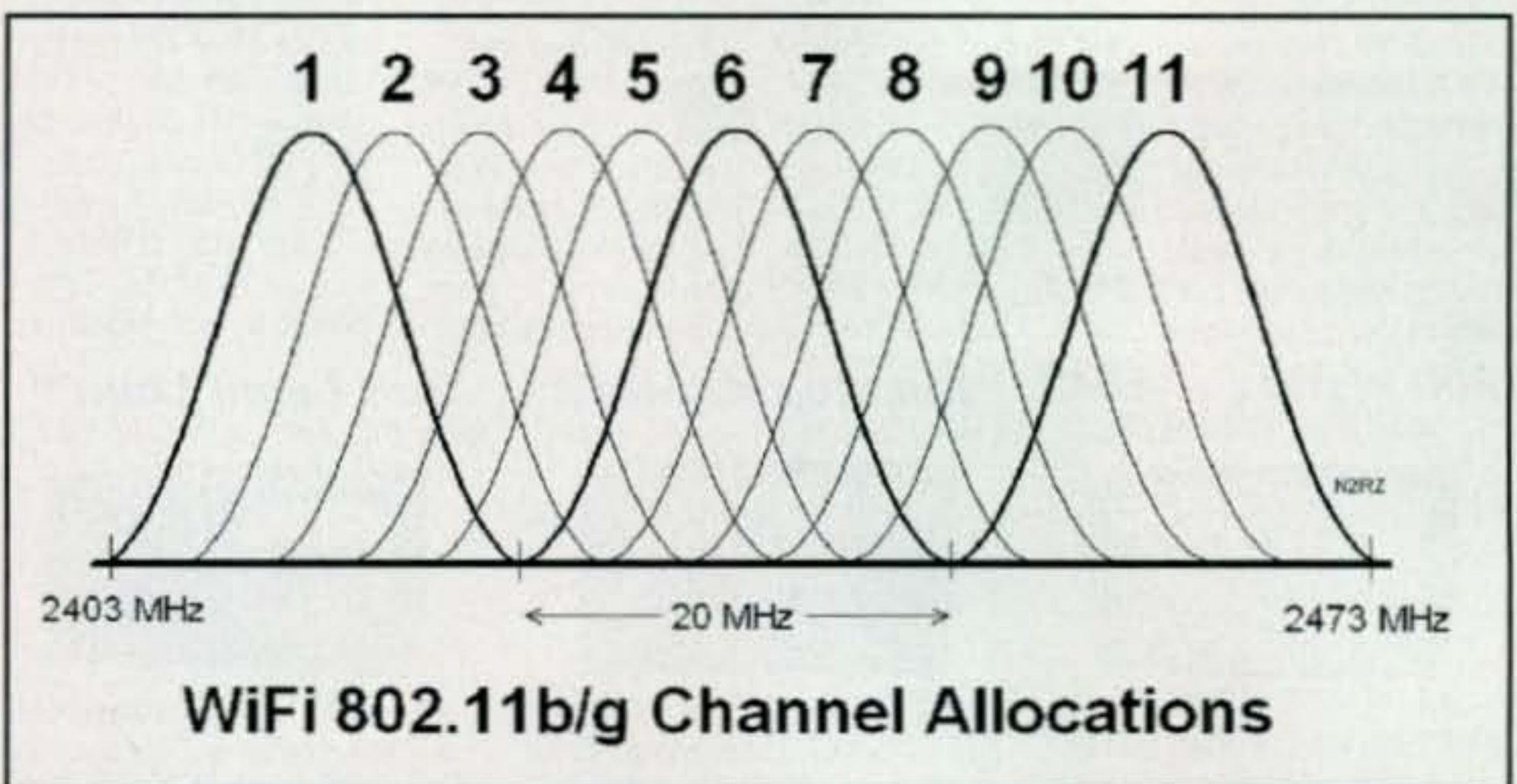
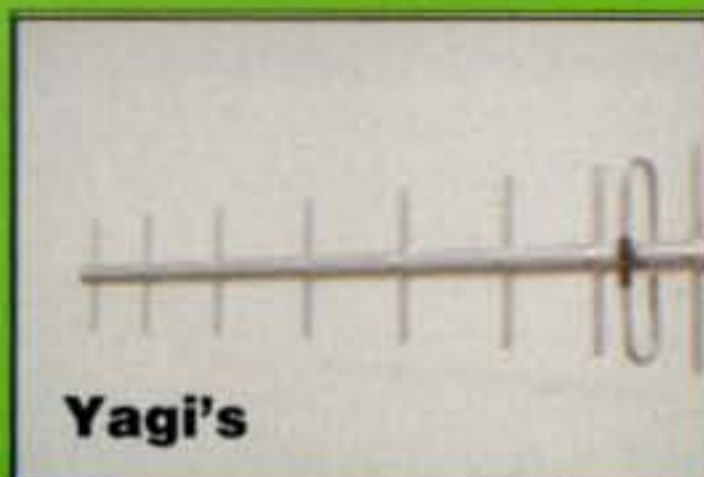


Fig. 3— WiFi 2.4-GHz channel allocations. Note that only channels 1, 6, and 11 do not overlap. Channel 6 is a common default and tends to have a lot of Part 15 activity, so it should be avoided where possible.

Hey Honey, I want something from M2 for Christmas!



With one of the widest selections of HF, VHF, UHF and Accessories...we have you covered for your Christmas needs.



Yagi's



Omni's



Rotators



Accessories

See your favorite Ham Radio Dealer for great prices!

Happy Holidays From the Crew at M2 Antenna Systems



#1 Customer Service



Largest Selection



Great Delivery Times



M2 Antenna Systems, Inc.

4402 N. Selland Ave. Fresno, CA 93722

559-432-8873 Fax 559-432-3059 Website: www.m2inc.com

wired network with a pair of wireless bridges, and off we go. Add some user access via a wireless router, and we have the high-speed wireless network shown in fig. 2.

### Reducing Interference

We need, however, to take actions to eliminate interference. With multiple RF devices operating on 2.4 GHz, some interference can be expected. It should go without saying that co-located RF devices need to be on different channels, but we must also use standard RF diversity techniques to minimize or eliminate interference. Note that only WiFi channels 1, 6, and 11 do not overlap (see fig. 3).

FM repeaters use expensive duplexers, which are very sharp but efficient filters, to eliminate interference between the output and input frequencies. This should also work on 2.4 GHz, but duplexers are expensive and need to be tuned. More simply, one can merely separate the antennas sufficiently, especially if they are directional Yagis. Pointing the Yagis in different directions helps a lot, as does physical separation and shielding them from one another (a window screen works well). Placing vertically-polarized omnidirectional anten-

nas as far as possible from one another vertically—one above the other on a tower, for example—is also effective.

### Equipment

Equipment is much less of an issue. A Google search for wireless router revealed many choices, such as the LinkSys WET54G for under \$90, or the Trendnet TEW-430APB for around \$40. Of course, the Cisco Aeronet 1400 can be had for a mere \$3200—a good choice for a large corporation more interested in range, reliability, and throughput than cost.

Speaking of range, the consumer-grade (meaning inexpensive) models are usually in the 10- to 30-milliwatt power range (10–15 dBm), while more expensive units can have 200 mw (23 dBm) output. If power becomes an issue, find a bi-directional amplifier (BDA), which is a quick (but not necessarily cheap) way to get into the watt range. I found many 1-watt BDAs in the under-\$200 price range, but an amplifier isn't always necessary.

However, what we save on output power can sometimes be made up by antennas. One nice thing about big antennas is that they hear better, too. On 2.4 GHz, "big" is a relative term, with

Get the quality that only CNC machined blueprinted components in either aircraft aluminum or stainless steel can offer.



### LITTLE TARHEEL II

3.5 TO 54 MHz

**\$349. + S/H**

#### Specifications

Lower Mast Size -- 1 1/2"

Lower Mast Length -- 16"

Whip Length -- 32"

Total Height of Antenna at 54 MHz -- 50"

Total Height of Antenna at 3.5 MHz -- 56"

Freq. Coverage Continuous

3.5 to 54 MHz

Power Rating -- 200 watts PEP

Typical SWR--1.5 or less

Weight -- 1.9 lbs.



### TARHEEL ANTENNAS

919-552-8788/Fax 919-552-4970

www.tarheelantennas.com

### MODEL 1000 "BUBBA"

3.5 TO 28 MHz

**\$499. + S/H**

#### Specifications

Lower Mast Size -- 4"

Freq. Coverage with 5' Whip -- 3.5 to 28 MHz

Total Height of Antenna at 28 MHz -- 9'4"

Total Height of Antenna at 3.5 MHz--10'4"

Power Rating--1.5 Kw PEP

Typical SWR--1.5 or less

Weight--8 lbs



## Resources

<[www.dd-wrt.com](http://www.dd-wrt.com)>: A website offering open-source alternative firmware for various wireless routers, some of which can greatly enhance networking functionality to professional standards.

<[http://www.dd-wrt.com/wiki/index.php/WDS\\_Linked\\_router\\_network](http://www.dd-wrt.com/wiki/index.php/WDS_Linked_router_network)>: Detailed step-by-step instructions on how to create a wireless backbone link between multiple access points that are part of the same wireless network.

<<http://www.oreilly.com/catalog/wirelesscommnet2/>>: Information on the book *Building Wireless Community Networks*, 2nd Ed., by Rob Flickenger (2003, 182 pages, ISBN 0-596-00502-4), a well-known and well-written how-to book.

<<http://www.linksysinfo.org/portal/forums/showthread.php?t=47118>>: A guide to setting up WDS (Wireless Distribution System) on the LinkSys WRT54G/GS routers. The website <[linksysinfo.org](http://linksysinfo.org)> is not related to LinkSys (a division of Cisco, Inc.), but is a valuable site for networkers.

<<http://www.sveasoft.com/>>: A company offering firmware replacements for popular routers, allowing them to function as wireless LAN components.

<<http://www.sparcotech.com/>>: One of many distributors of professional WiFi gear.

<<http://www.fab-corp.com/>>: Fleeman, Anderson, and Bird, also known as FAB, is another distributor of wireless gear.

most actually being quite small for their gain. Also, small can mean inexpensive. For example, MFJ sells its Model 1800 16-element WiFi beam Yagi, with 15 dBi gain, for under \$30—and it weighs only 2.9 ounces. Directional antennas are good choices for backbone (also called “backhaul”) links. For user ports, Comet sells a 2.4-GHz vertical omnidirectional antenna, Model GP-24, for about \$150, which boasts about the same gain as the MFJ Yagi. A 21-dBi parabolic grid antenna can be had for under \$80.

Wireless routers and access points are plentiful and cheap, with the local office-supply store having one or another on sale weekly for under \$30. Access points are not as common, but are readily available in various power ranges. For example, a quick search of the web found a D-Link Model DWL-G700AP access point for under \$40, but it has only 32 mw transmit power. A NetGear WG102, with 100 mw power, sells for about \$130, and a pro-quality 2611CB3 from Netgate, with 200 mw power, but limited to 802.11b speeds, costs \$100.

Wired equipment, such as switches, are plentiful, cheap, and widely avail-

able. Every few weeks a D-Link 4-port switch goes on sale for under \$8 after a mail-in rebate. My local Staples store has a LinkSys switch for about \$25. Just remember that you really don't want a wired router in most cases, unless you expect to provide internet access. If you do want to, the best way to save your license is to limit access to only certain websites by using a proxy server, a computer running software that controls access. If your local schools have internet access, it is likely through a proxy server.

## Legal Aspects

One point about antennas, wireless, and the law: If you intend to run your entire network under Part 15, you need to learn about, understand, and comply with the rules. In particular, there are limits on output power and allowable antennas, and you're not allowed to modify the equipment. Under Part 97, however, we have a different set of rules, allowing a free selection of antennas, increased power limits, and ability to modify equipment (such as swapping out antenna connectors), but at the

“cost” of having to identify at least every 10 minutes, and ensuring that your network cannot be accessed by Part 15 (non-ham) users.

We've just seen how we can use consumer-grade WiFi gear to build a high-speed wireless network. Our understanding of RF comes in handy, since we can select antennas and manage power levels. The biggest advantage is our ability to run all this under Part 97, allowing the use of antennas, amplifiers, and other gear to design a high-performance network that our Part 15 cousins can only dream about.

The last part, that of really designing a network as opposed to throwing some aluminum into the air to see what happens, has been covered before, but will be revisited sometime in the future.

## FIRST

As I have remarked in this column before, as the winter solstice approaches we tend to become just a little bit kinder to one another. An organization I'm involved with, FIRST (For Inspiration and Recognition of Science and Technology), uses the guise of a serious robotics competition to help high school kids learn about teamwork, cooperation, and “gracious professionalism.” If you've never heard of FIRST, I urge you to go to its website ([www.usfirst.org](http://www.usfirst.org)) and find a local team.

FIRST has over a thousand teams building serious robots to perform a specific task, with a common kit of parts, and each team has only six weeks to design, build, and test its robot before shipping it off to a regional competition. The competition and six-week build season starts with the kickoff on January 6, 2007 and I am 100% certain that any team you contact will welcome your involvement, whether a single visit, once a week for a few hours, or seven days a week for six weeks. Your reward will be the grateful students who will truly appreciate your knowledge and experience as they approach a design challenge that is “the hardest fun ever.”

As is traditional for my last column of the year, I want to use a bit of space to wish everyone the very best of health, happiness, and prosperity in the coming year. All many of us ever want is peace in our day, and so I offer my hopes for each and every one of us. I also thank everyone who has taken the time to write to me with comments, suggestions, ideas for future columns, and yes, even complaints. We're used to two-way communications, and this column isn't any different. Until next time . . .73, Don, N2IRZ

## HT “HF” Antenna Fantastic Multiband Reception!\*

- Experience great fun with handheld HF!
- Extremely high gain antenna over VHF/UHF HT antennas\*
- I mean high gain - no kidding\*!
- Super long 33" whip for added performance
- 5 primary bands are in 80m-10m ham or 41m-13m shortwave in 2 versions and a multitude of other non-primary bands
- No fidgeting push button operation
- Sleek design w/black housing
- Lightweight construction

Antenna Shown (Collapsed) w/Kenwood TH-F6A



**\$99.95**  
+ \$7.00 S&H  
to Lower 48 States

Package includes tuned antenna system, PL-259 and BNC adapters, pocket reference card



**Performance HF, Inc.**  
11925 Meriden Lane  
San Diego, CA 92128  
Patent Pending

\*See [www.PerformanceHF.com](http://www.PerformanceHF.com) for additional information

To order call (858) 487-8050 or go to [www.PerformanceHF.com](http://www.PerformanceHF.com)



# MFJ TUNERS

## New, Improved MFJ-989D 1500 Watt legal limit Antenna Tuner

World's most popular 1500 Watt Legal Limit Tuner just got better -- much better -- gives you more for your money!

New, improved MFJ-989D legal limit antenna tuner gives you better efficiency, lower losses and a new true peak reading meter. It easily handles full 1500 Watts SSB/CW, 1.8 to 30 MHz, including MARS/WARC bands.

New dual 500 pF air variable capacitors give you twice the capacitance for more efficient operation on 160 and 80 Meters.

New, improved AirCore™ Roller Inductor gives you lower losses, higher Q and handles more power more efficiently.

New TrueActive™ peak reading Cross-Needle SWR/Wattmeter lets you read true peak



power on all modes.

New high voltage current balun lets you tune balanced lines at high power with no worries.

New crank knob lets you reset your roller inductor quickly,

MFJ-989D  
**\$369<sup>95</sup>**

smoothly and accurately.

New larger 2-inch diameter capacitor knobs with easy-to-see dials make tuning much easier.

New cabinet maintains components' high-Q. Generous air

vents keep components cool. 12 1/8"Wx6Hx11 1/8"D inches.

Includes six position ceramic antenna switch, 50 Ohm dummy load, indestructible multi-color Lexan front panel with detailed logging scales and legends.

The MFJ-989D uses the superb time-tested T-Network. It has the widest matching range and is the easiest to use of all matching networks. Now with MFJ's new 500 pF air variable capacitors and new low loss roller inductor, it easily handles higher power much more efficiently.

**No Matter What™ Warranty**

Every MFJ tuner is protected by MFJ's famous one year No Matter What™ limited warranty. We will repair or replace your MFJ tuner (at our option) for a full year.

## More hams use MFJ tuners than all other tuners in the world!

### MFJ-986 Two knob Differential-T™



Two knob tuning (differential capacitor and AirCore™ roller inductor) makes tuning foolproof and easier than ever. Gives minimum SWR at only one setting. Handles 3 KW PEP SSB amplifier input power (1.5 KW output). Gear-driven turns counter, lighted peak/average Cross-Needle SWR/Wattmeter, antenna switch, balun. 1.8 to 30 MHz. 10 1/4"Wx4 1/2"Hx15 in.

### MFJ-962D compact kW Tuner



A few more dollars steps you up to a kW tuner for an amp later. Handles 1.5 KW PEP SSB amplifier input power (800W output). Ideal for Ameritron's AL-811H! AirCore™ roller inductor, gear-driven turns counter, pk/avg lighted Cross-Needle SWR/Wattmeter, antenna switch, balun, Lexan front, 1.8-30MHz. 10 1/4"x4 1/2"x10 7/8 in.

### MFJ-969 300W Roller Inductor Tuner



Superb AirCore™ Roller Inductor tuning. Covers 6 Meters thru 160 Meters! 300 Watts PEP SSB. Active true peak reading lighted Cross-Needle SWR Wattmeter, QRM-Free PreTune™, antenna switch, dummy load, 4:1 balun, Lexan front panel. 3 1/2"Hx10 1/2"Wx9 1/2"D inches.

MFJ-986  
**\$339<sup>95</sup>**

MFJ-962D  
**\$279<sup>95</sup>**

MFJ-969  
**\$199<sup>95</sup>**

### MFJ-949E deluxe 300 Watt Tuner

More hams use MFJ-949s than any other antenna tuner in the world!

Handles 300 Watts. Full 1.8 to 30 MHz coverage, custom inductor switch, 1000 Volt tuning capacitors, full size peak/average lighted Cross-Needle SWR/Wattmeter, 8 position antenna switch, dummy load, QRM-Free PreTune™, scratch proof Lexan front panel. 3 1/2"Hx10 3/8"Wx7D inches. MFJ-948, \$139.95. Economy version of MFJ-949E, less dummy load, Lexan front panel.

### MFJ-941E super value Tuner

The most for your money!

Handles 300 Watts PEP, covers 1.8-30 MHz, lighted Cross-Needle SWR/Wattmeter, 8 position antenna switch, 4:1 balun, 1000 volt capacitors, Lexan front panel. Sleek 10 1/2"Wx2 1/2"Hx7D in.

### MFJ-945E HF/6M mobile Tuner

Extends your mobile antenna bandwidth so you don't have to stop, go outside and adjust your antenna. Tiny 8x2x6 in. Lighted Cross-Needle SWR/Wattmeter. Lamp and bypass switches. Covers 1.8-30 MHz and 6 Meters. 300 Watts PEP. MFJ-20, \$6.95, mobile mount.

### MFJ-971 portable/QRP Tuner

Tunes coax, balanced lines, random wire 1.8-30 MHz. Cross-Needle Meter. SWR, 30/300 or 6 Watt QRP ranges. Matches popular MFJ transceivers. Tiny 6x6 1/2"x2 1/2 in.

### MFJ-901B smallest Versa Tuner

MFJ's smallest (5x2x6 in.) and most affordable wide range 200 Watt PEP Versa tuner. Covers 1.8 to 30 MHz. Great for matching solid state rigs to linear amps.



MFJ-949E  
**\$169<sup>95</sup>**



MFJ-941E  
**\$129<sup>95</sup>**



MFJ-945E  
**\$119<sup>95</sup>**



MFJ-971  
**\$109<sup>95</sup>**



MFJ-901B  
**\$89<sup>95</sup>**

### MFJ-902 Tiny Travel Tuner

Tiny 4 1/2"x2 1/4"x3 inches, full 150 Watts, 80-10 Meters, has tuner bypass switch, for coax/random wire.

MFJ-904H, \$139.95. Same but adds Cross-needle SWR/Wattmeter and 4:1 balun for balanced lines. 7 1/4"x2 1/4"x2 1/4 inches.

### MFJ-16010 random wire Tuner

Operate all bands anywhere with MFJ's reversible L-network. Turns random wire into powerful transmitting antenna. 1.8-30 MHz. 200 Watts PEP. Tiny 2x3x4 in.

### MFJ-906/903 6 Meter Tuners

MFJ-906 has lighted Cross-Needle SWR/Wattmeter, bypass switch. Handles 100 W FM, 200W SSB. MFJ-906, \$89.95. MFJ-903, \$59.95. Like MFJ-906, less SWR/Wattmeter, bypass switch.

### MFJ-921/924 VHF/UHF Tuners

MFJ-921 covers 2 Meters/220 MHz. MFJ-924 covers 440 MHz. SWR/Wattmeter. 8x2 1/2"x3 in.

### MFJ-931 artificial RF Ground

Eliminates RF hot spots, RF feedback, TVI/RFI, weak signals caused by poor RF grounding. Creates artificial RF ground or electrically places far away RF ground directly at rig. MFJ-931, \$99.95. MFJ-934, \$199.95, Artificial ground/300 Watt Tuner/Cross-Needle SWR/Wattmeter.

### Dealer/Catalog/Manuals

Visit: <http://www.mfjenterprises.com> or call toll-free 800-647-1800

1 Year No Matter What™ warranty • 30 day money back guarantee (less s/h) on orders direct from MFJ

**MFJ** MFJ ENTERPRISES, INC.  
300 Industrial Pk Rd, Starkville, MS 39759 PH: (662) 323-5869  
Tech Help: (662) 323-0549

FAX: (662) 323-6551 8-4:30 CST, Mon.-Fri. Add shipping. Prices and specifications subject to change. (c) 2006 MFJ Enterprises, Inc.

# SAVE BIG ON ANTENNAS, TOWERS & CABLE

## TELESCOPING ALUMINUM TUBING

<b>DRAWN 6063-T832</b>	1.250" .....	\$1.65/ft
.375" .....	1.375" .....	\$1.85/ft
.500" .....	1.500" .....	\$2.05/ft
.625" .....	1.625" .....	\$2.35/ft
.750" .....	1.750" .....	\$2.60/ft
.875" .....	1.875" .....	\$2.85/ft
1.000" .....	2.000" .....	\$3.10/ft
1.125" .....	2.125" .....	\$3.60/ft

<b>EXTRUDED 6061-T6</b>	.188" rod .....	\$ .35/ft
.250" rod .....	4"x.375" bar..	\$6.50/ft
2"x.125" .....	2"x.250" .....	\$8.00/ft

**6' OR 12' LENGTHS. 6' LENGTHS SHIP UPS.**

## COMET ANTENNAS

GP3, 2m/70cm Vertical .....	\$99
GP6, 2m/70cm Vertical .....	\$159
GP9 2m/70cm Vertical .....	\$199
GP15, 6m/2m/70cm Vertical .....	\$159
GP98, 2m/70cm/23cm Vertical .....	\$169

## DIAMOND ANTENNAS

X50A, 2m/70cm Vertical .....	\$109
X200A, 2m/70cm Vertical .....	\$149
X510MA 2m/70cm Vertical .....	\$195
X500HNA 2m/70cm Vertical .....	\$259
X700HNA 2m/70cm Vertical .....	\$399
V2000A 6m/2m/70cm Vertical .....	\$172

## M2 VHF/UHF ANTENNAS

6M5X/6M7JHV .....	\$259/319
6M2WLC/6M9KHW .....	\$549/589
2M4/2M7/2M9SSBFM .....	\$119/129/149
2M12/2M5WL .....	\$209/249
2M5-440XP, 2m/70cm .....	\$219
440-470-5HD/420-50-11 .....	\$169/119
432-9WL/432-13WLA .....	\$219/299
440-18/440-21ATV .....	\$159/179

## M2 SATELLITE ANTENNAS

2MCP14/2MCP22 .....	\$209/299
436CP30/436CP42UG .....	\$299/349

**CALL FOR MORE IN-STOCK M2 ITEMS.**

## HYGAIN ANTENNAS

AV18HT Hightower .....	\$739
DIS71/72 .....	\$269/569
TH3JRS/TH3MK4 .....	\$319/399
TH5MK2/TH2MK3 .....	\$659/319
TH7DX/TH11DX .....	\$749/995

## MFJ

259B/269, Analyzers .....	\$259/339
948/949E, Tuners .....	\$139/159
969, HF-6m Tuner .....	\$189
986, 3kW Tuner .....	\$319
989D, Deluxe 3kW Tuner .....	\$339
991/993 Autotuners .....	\$169/229

## ANTENNA ROTATORS

M2 OR-2800PDX .....	\$1379
Hygain HAM IV .....	\$499
Hygain T2X Tailtwister .....	\$569
Yaesu G-450A .....	\$249
Yaesu G-800SA/G-800DXA .....	\$329/409
G-1000DXA .....	\$499
Yaesu G-2800SDX .....	\$1089
Yaesu G-550 .....	\$299
Yaesu G-5500 .....	\$599

## ROTATOR CABLE

R62 (#18), HD 6 conductor .....	\$ .49/ft.
R81/82/84, 8 cond. ....	\$ .49/ft./ .69/ft./ .1.19/ft.

## COAX CABLE

RG-213/U, (#8267 Equiv.) .....	\$ .69/ft
RG-8X, Mini RG-8 Foam .....	\$ .35/ft
RG-213/U Jumpers .....	Please Call
RG-8X Jumpers .....	Please Call

**CALL FOR MORE COAX/CONNECTORS.**

## TIMES MICROWAVE LMR® COAX

LMR-400 .....	\$ .69/ft
LMR-400DB Direct Bury .....	\$ .99/ft
LMR-400 Ultraflex .....	\$ .99/ft
LMR-600 .....	\$1.39/ft
LMR600 Ultraflex .....	\$2.19/ft

**CALL FOR MORE SIZES & CONNECTORS.**

## TOWER HARDWARE

3/8"EE/EJ Turnbuckle .....	\$15/16
1/2"x9"EE/EJ Turnbuckle .....	\$21/23
1/2"x12"EE/EJ Turnbuckle .....	\$24/26
3/16"/1/4" Big Grips .....	\$5/6
3/16"EHS-500'/1/4"EHS-500' .....	\$119/149

**PLEASE CALL FOR MORE HARDWARE.**

## HIGH CARBON STEEL MASTS

5 FT x .12" / 5 FT x .18" .....	\$45/59
11 FT x .12" / 11 FT x .25" .....	\$80/199
12 FT x .18" / 17 FT x .12" .....	\$159/149
20 FT x .18" / 22 FT x .12" .....	\$249/199
23 FT x .25" / 24 FT x .18" .....	\$369/299

## PHILLYSTRAN GUY CABLE

HPTG1200I .....	\$ .45/ft
1200 END KIT .....	\$3.60
HPTG2100I .....	\$ .59/ft
PLP2738 Big Grip (2100) .....	\$7.00
HPTG4000I .....	\$ .89/ft
PLP2739 Big Grip (4000) .....	\$9.50
HPTG6700I .....	\$1.29/ft
PLP2755 Big Grip (6700) .....	\$13.50
HPTG11200 .....	\$1.89/ft
PLP2758 Big Grip (11200) .....	\$16.00

**PLEASE CALL FOR HELP SELECTING THE PHILLYSTRAN SIZE FOR YOUR PROJECT.**

## ROHN TOWER

25G/45G/55G .....	\$99/209/259
25AG2/25AG3/25AG4 .....	\$149/199/139
45AG2/45AG4 .....	\$289/289
AS25G/AS455G .....	\$55/115
BPC25G/BPC45G/BPC55G .....	\$89/129/149
BPL25G/BPL45G/BPL55G .....	\$109/189/399
GA25GD/GA45GD/GA55GD .....	\$109/149/179
GAR30/GAS604 .....	\$39/49
SB25G/45/55 .....	\$65/119/169
SB25G5/SBH25G .....	\$85/219
TB3/TB4 .....	\$149/169

**PLEASE CALL FOR MORE ROHN ITEMS.**

## TRYLON "TITAN" TOWERS

### SELF-SUPPORTING STEEL TOWERS

T200-64 64', 15 square feet .....	\$1489
T200-72 72', 15 square feet .....	\$1819
T200-80 80', 15 square feet .....	\$2169
T200-88 88', 15 square feet .....	\$2529
T200-96 96', 15 square feet .....	\$2969
T300-88 88', 22 square feet .....	\$2869
T400-80 80', 34 square feet .....	\$2759
T500-72 72', 45 square feet .....	\$2629
T600-64 64', 60 square feet .....	\$2499
T700-56 56', 80 square feet .....	\$2349

**MORE TRYLON TOWERS AVAILABLE.**

## UNIVERSAL ALUMINUM TOWERS

4-40'/50'/60' .....	\$619/879/1249
7-50'/60'/70' .....	\$1119/1599/2079
9-40'/50'/60' .....	\$869/1249/1719
12-30'/40' .....	\$659/1029
15-40'/50' .....	\$1159/1629
16-60'/80' .....	\$1529/3529
21-50'/60'/70' .....	\$1849/2459/3059
23-30'/40' .....	\$1029/1509
35-40' .....	\$1739

**BOLD IN PART NUMBER SHOWS WIND LOAD CAPACITY. SHIPS DIRECT FROM THE FACTORY TO SAVE YOU MONEY!**

## US TOWER CRANK-UPS

MA40/MA550 .....	\$1289/1999
MA770/MA850 .....	\$3279/5049
TMM433SS/HD .....	\$1719/2089
TMM541SS .....	\$2259
TX438, 38' Crankup Tower .....	\$1619
TX455, 55' Crankup Tower .....	\$2229
TX472, 72' Crankup Tower .....	\$3689
TX489MDPL, 89' Motorized HD .....	\$9599
HDX538, 38' Extra Heavy Duty .....	\$1919
HDX555, 55' Extra Heavy Duty .....	\$3379
HDX572MDPL 72' Motorized .....	\$8769

**SHIPPED DIRECT TO SAVE YOU MONEY!**

**WEEKDAY HOURS:  
9 AM-5 PM CENTRAL**

**SATURDAY HOURS:  
9 AM-12 NOON CENTRAL**

**CREDIT CARDS:  
M/C, VISA, DISCOVER**

# TEXAS TOWERS

A Division of Texas RF Distributors, Inc. • 1108 Summit Avenue, Suite #4 • Plano, TX 75074

## (800) 272-3467

**LOCAL CALLS:  
(972) 422-7306**

**EMAIL ADDRESS:  
sales@texas Towers.com**

**INTERNET ADDRESS:  
www.texas Towers.com**

# GREAT US TOWER CRANK-UP DEALS!

## TX SERIES CRANK-UP TOWERS

- Handles 35 square feet of antenna load at 50 MPH, 14.75 square feet at 70 MPH.
- All models supplied with hinged T-base, anchor bolts, hand winch (except motor drive models), top plate, and rotor plate.
- MDP & MDPL models include motor drive
- Options include coax arms, raising fixtures, masts, motor drives, and more!

Now shipping from CA for west coast customers, and KS for east coast and mid-west customers, to reduce freight cost!



### TX SERIES HEAVY DUTY CRANK-UP TOWERS

TOWER MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	LIST PRICE	SALE PRICE
TX-438	38'	21'6"	355	\$1,972	\$1,619
TX-455	55'	22'	670	\$2,727	\$2,229
TX-472	72'	22'8"	1040	\$4,481	\$3,689
TX-472MDP	72'	22'8"	1210	\$7,211	\$5,929
TX-489MDPL	89'	23'4"	1800	\$11,692	\$9,599



## HDX SERIES CRANK-UP TOWERS

- Heavy duty, handles 44.7 square feet of antenna load at 50 MPH, 35 square feet at 70 MPH.
- All models supplied with hinged T-base, anchor bolts, hand winch (except motor drive models), top plate, and rotor plate.
- MDPL models include motor drive
- Options include coax arms, raising fixtures, masts, motor drives, and more!

Now shipping from CA for west coast customers, and KS for east coast and mid-west customers, to reduce freight cost!

### HDX SERIES HEAVY DUTY CRANK-UP TOWERS

TOWER MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	LIST PRICE	SALE PRICE
HDX-538	38'	21'6"	600	\$2,339	\$1,919
HDX-555	55'	22'	870	\$4,093	\$3,379
HDX-572MDPL	72'	22'8"	1600	\$10,719	\$8,769
HDX-589MDPL	89'	23'8"	2440	\$14,031	\$11,499
HDX-689MDPL	89'	23'8"	3450	\$27,104	\$22,199
HDX-5106MDPL	106'	24'8"	3700	\$29,495	\$23,799

## MA SERIES CRANK-UP MASTS

- Handles up to 22 square feet of antenna load. (See chart below)
- MDP models include motor drive.
- All models supplied with anchor bolts, load-actuated hand winch, and house bracket.
- Options include coax arms, raising fixtures, motor drives, self-supporting and rotator bases, remote control panel, and more!

Now shipping from CA for west coast customers, and KS for east coast and mid-west customers, to reduce freight cost!



### MA SERIES CRANK-UP MASTS

MAST MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	50 MPH (sq. ft.)	70 MPH (sq. ft.)	LIST PRICE	SALE PRICE
MA-40	40'	21'6"	242	16.5	6.8	\$1,569	\$1,289
MA-550	55'	22'1"	435	22	9	\$2,427	\$1,999
MA-550MDP	55'	22'1"	620	22	9	\$4,639	\$3,799
MA-770	71'	22'10"	645	15.5	5.5	\$4,001	\$3,279
MA-770MDP	71'	22'10"	830	15.5	5.5	\$6,329	\$5,149
MA-850MDP	85'	23'6"	1128	15.3	6.3	\$8,531	\$5,949

## TMM SERIES COMPACT CRANK-UP TOWERS

- Handles 20 square feet of antenna load at 50 MPH, 8 square feet at 70 MPH.
- Compact design is great for areas with tower restrictions, or where a less intrusive installation is desirable.
- All models supplied with hinged T-base, anchor bolts, load-actuated hand winch, 8' steel mast, top plate, and rotor plate.
- Options include coax arms, raising fixtures, motor drives, thrust bearing, remote control panel, and more!

Now shipping from CA for west coast customers, and KS for east coast and mid-west customers, to reduce freight cost!



### TMM SERIES COMPACT CRANK-UP TOWERS

TOWER MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	LIST PRICE	SALE PRICE
TMM-433SS	33'	11'4"	315	\$2,105	\$1,719
TMM-433HD	33'	11'4"	400	\$2,550	\$2,089
TMM-541SS	41'	12'	430	\$2,764	\$2,259

WEEKDAY HOURS:  
9 AM-5 PM CST

SATURDAY HOURS:  
9 AM-12 NOON CST

CREDIT CARDS:  
M/C, VISA, DISCOVER

# TEXAS TOWERS

A Division of Texas RF Distributors, Inc. • 1108 Summit Avenue, Suite #4 • Plano, TX 75074

## (800) 272-3467

LOCAL CALLS:  
(972) 422-7306

EMAIL ADDRESS:  
sales@texastowers.com

INTERNET ADDRESS:  
www.texastowers.com

# An LED Nite-Lite for Portable Operation

I like to operate HF portable as often as I can, from operating in a park or campground with my IC-703, to operating from a condo when on vacation with my IC-706MKIIG. My favorite times to operate tend to be later on at night, or early in the morning, especially when I'm with my family. As a 99% CW operator, the use of headphones solves the "noise" problem when my family or others may be trying to sleep. However, a small light is also necessary for portable operations at night, and this light should draw very little current if you're operating from battery power. The light should also not be a distraction to others.

My solution was to build a variable-intensity LED light source powered from the IC-703/706 transceiver antenna tuner connector socket. Obviously, you can provide voltage from any available transceiver accessory socket or directly from your power supply. I chose to use ultra-bright white LEDs, since the price of these has dropped significantly in recent years. White LEDs have a forward voltage drop of 3.6–4 volts, so three of these in series are perfect for powering from a 13.8-volt DC source. Since the LEDs are in series, you only need 20 ma total for the three LEDs as opposed to 20 ma each if the LEDs were connected in parallel. The circuit I used is shown in fig. 1, and the

\*1517 Creekside Drive, Richardson, TX 75081  
e-mail: <ad5x@cq-amateur-radio.com>

Qty	Description	Part No.	Price
1	Plastic Box	1551-HBK	\$1.95
1	Magnet	MAG-97	\$2.75
1	Mini- switch	SSW-37	4/\$1.00
1	5K pot	APT-5K	\$1.00
1	Knob	KNB-127	\$0.50
1	150 ohm res.	150	10/\$0.50
3	White light LEDs	LED-121	\$0.65 ea.
1	4-pin plug	RS 274-224	\$1.00

Table 1— Parts list for the LED Nite-Lite.

parts list is shown in Table I. Except for the 4-pin Molex connector that interfaces to the IC-703/706, all of the parts were purchased from All Electronics ([www.allelectronics.com](http://www.allelectronics.com)).

I placed a 150-ohm resistor in series with the LED string to ensure that I wouldn't exceed the 20 milliamp current rating of the LEDs. I determined this resistor value as follows:

$$R = E/I = 3 \times 3.6/0.02 = 150 \text{ ohms}$$

When I connected the single 150-ohm resistor with the three series ultra-bright white LEDs, I was surprised to see just how bright the light output was. Because of this, I added the 5K-ohm potentiometer in series so I could adjust the brightness. I also added a small switch for turning off power to the LED light. Feel free to substitute other values for the potentiometer (down to about 1K) and other types of switch. Ultra-bright red LEDs also work very well. Keep in mind that red LEDs have a lower forward voltage drop (approximately 2 volts), so you should put more red LEDs in series and/or increase the value of the fixed series resistor.

Everything was built into the plastic box called out in the parts list. I mounted the LEDs in the bottom of the box using hot glue after drilling clearance holes for them. The 1K pot and switch are

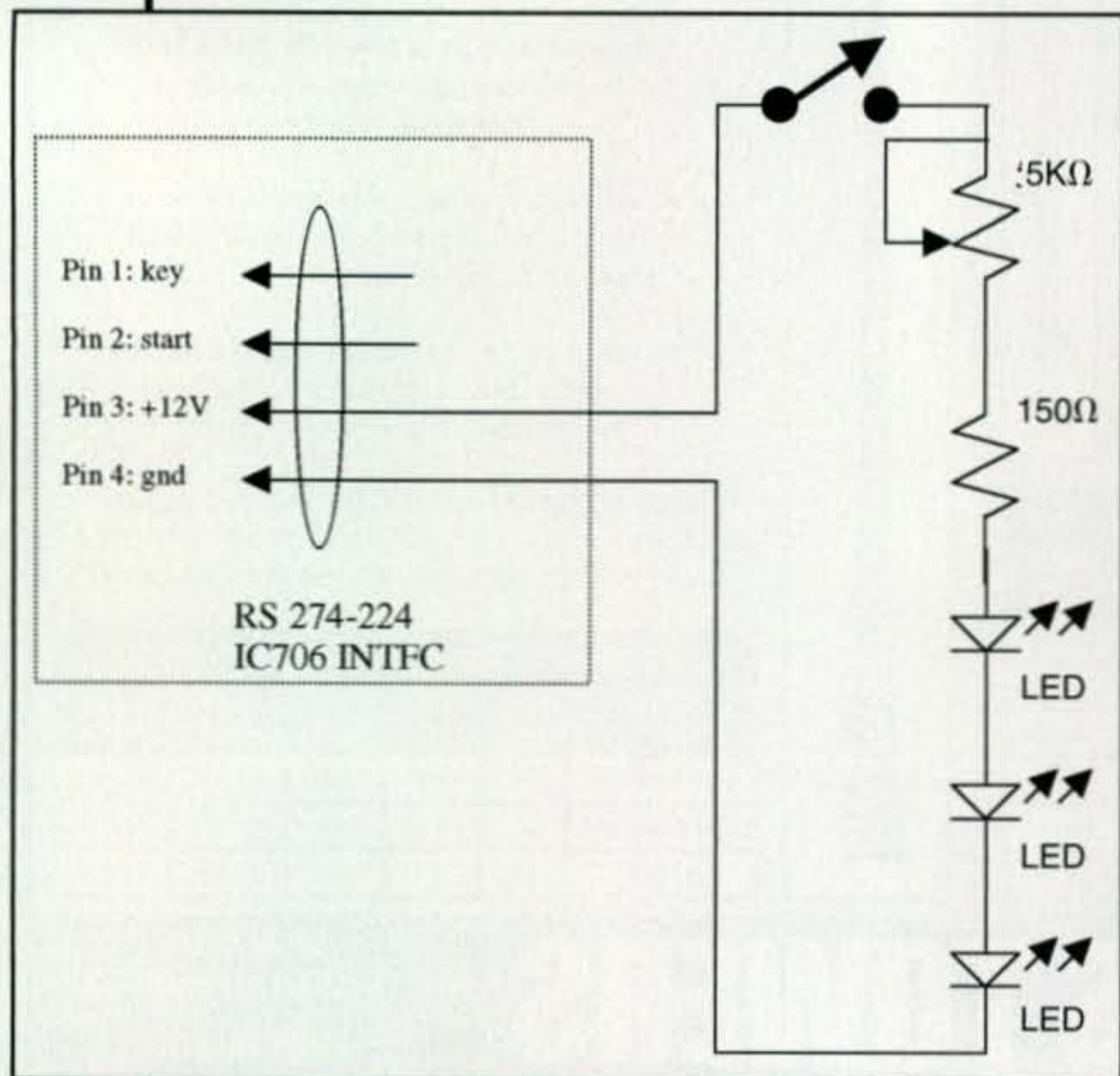
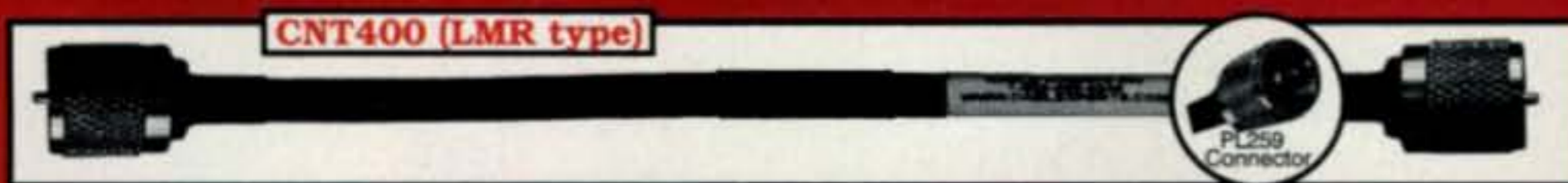


Fig. 1— Schematic of the LED Nite-Lite.



Photo A— Internal wiring view. Pretty simple, huh? (Photos by the author)

# Andrew Cinta® Cable Assemblies



All assemblies are tested to ensure optimum performance.

**CNT600 (LMR type)**  
 Connector: N, PL259, TNC & 7/16  
 Burial: Yes, UV Resistant: Yes.  
 Shields: 2 (100% bonded foil +90% TC Braid) **VP 87%**.  
 Attenuation 3.9dB @ 2 GHz at 100ft.  
 Usage 450 MHz and Higher.  
 HALF INCH SIZE SHOWN

**CNT195 (LMR type)**  
 Connector: N, PL259, TNC, SMA, & BNC  
 Burial: Yes, UV Resistant: Yes.  
 Shields: 2 (100% bonded foil +90% TC Braid) **VP 80%**.  
 Attenuation 0.45dB @ 2 GHz (3ft Jumper).  
 Usage 1 MHz and Higher.  
 RG58U SIZE NOT SHOWN

**CNT400 (LMR type)**  
 Connector: N, PL259, TNC, SMA, BNC.  
 Burial: Yes, UV Resistant: Yes.  
 Shields: 2 (100% bonded foil +90% TC Braid) **VP 85%**.  
 Attenuation 6.0dB @ 2 GHz at 100ft.  
 Usage 450 MHz and Higher.  
 RG8U SIZE SHOWN

Please visit us on-line for:  
 Cable Selection Guidance and Prices  
[www.cablexperts.com](http://www.cablexperts.com)

**CNT240 (LMR type)**  
 Connector: N, PL259, TNC, SMA, BNC.  
 Burial: Yes, UV Resistant: Yes.  
 Shields: 2 (100% bonded foil +90% TC Braid) **VP 84%**.  
 Attenuation 3.0dB @ 150 MHz at 100ft.  
 Usage 1 MHz and Higher.  
 RG8X SIZE SHOWN



Photo B— The three LEDs extend through the box.

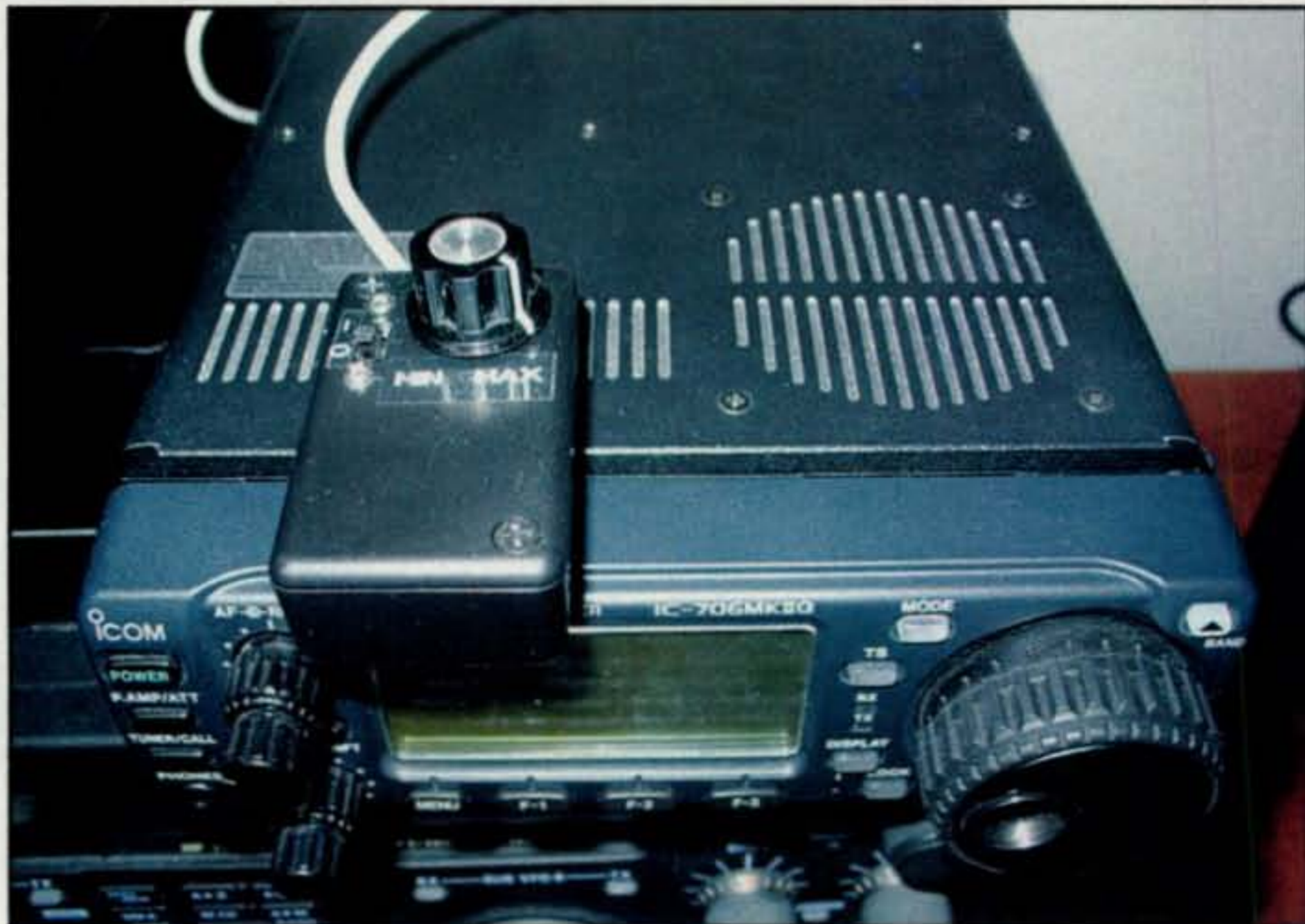


Photo C— The LED Nite-Lite "stuck" to the cover of the author's IC-703.

mounted on the cover of the box. I glued a magnet to the back of the box, which permits me to attach the unit to the steel cover of my IC-703/706. Photo A shows the internal wiring view of the LED light, photo B shows the LEDs mounted in the box, and photo C shows the unit "stuck" to the top of my transceiver. Since LEDs have a very narrow viewing angle, the

light box does a great job of illuminating the area just in front of your transceiver, while little light (as light may disturb others) is given off to the sides.

have great holidays! Remember, I'm always looking for input for this column, so e-mail your ideas, questions, or articles to me at <ad5x@cq-amateur-radio.com>.

That's it for this month. I hope you

73, Phil, AD5X

## Goodies for the Holidays

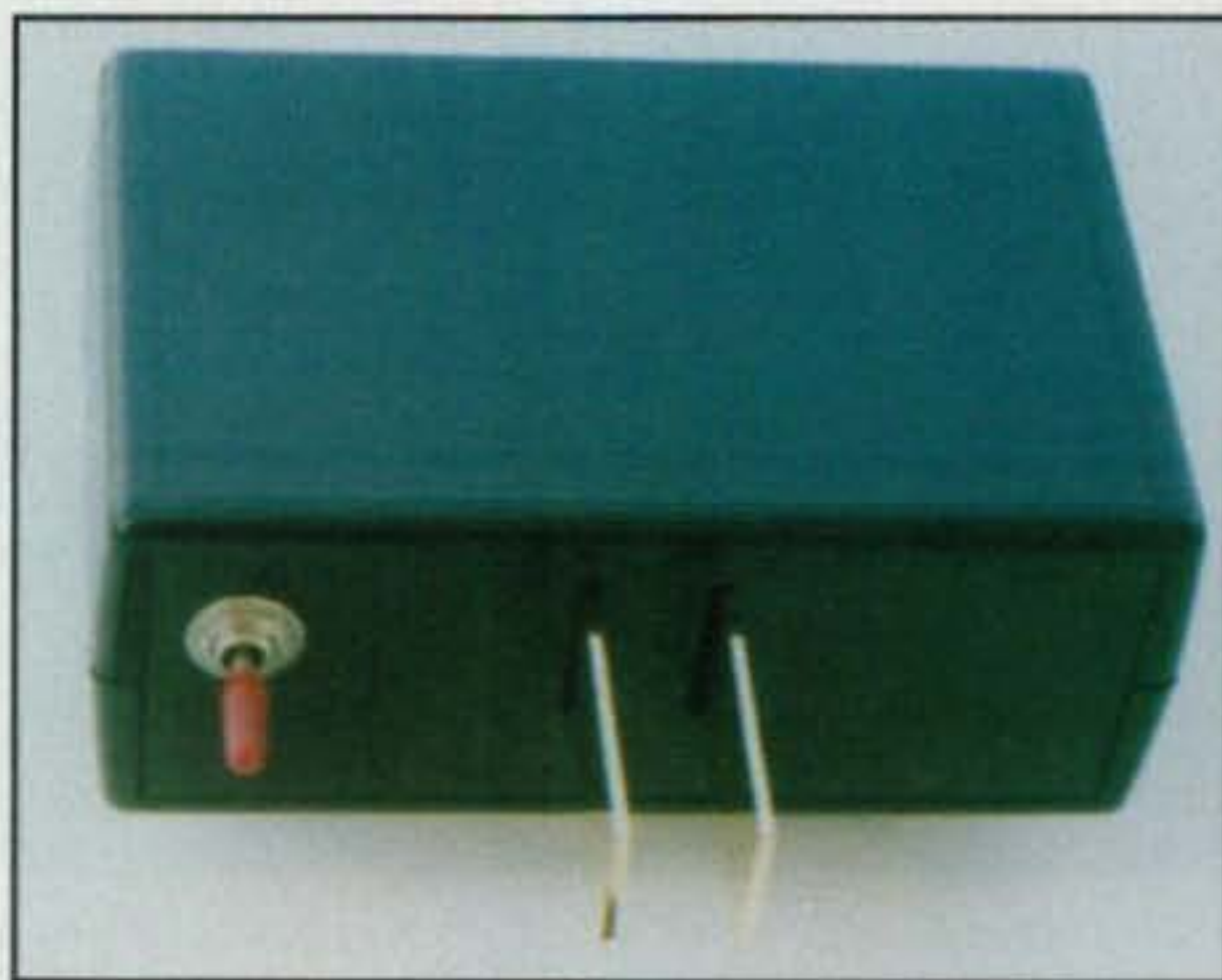
**H**appy Holidays, dear friends and radio amateurs extraordinaire! Here's hoping 2006 was a good year for you, 2007 will be even better, and you will enjoy many more pleasant days hamming to the max. In light of those fine wishes, we once again make our traditional December column diversion to peek at some new and/or easily overlooked delights guaranteed to boost your radio fun at least 10 dB. Our focus mainly will be affordable accessories, and a captivating array of really neat goodies has hit the market recently. I will thus say enjoy the views, order two or three items you find appealing (from the suppliers, not from me). Let's begin "staples" for good hamming—keys and microphones.

### All-Time Favorites

Keys and mics are popular items among radio amateurs near and far, and some really impressive "newbies" are making their debut this year.

First up is the unique P1P Touch Paddle made by Sumner Eagerman, WA1JOS, and shown in photo 1. The paddle's circuitry and (9 volt) battery are enclosed in a heavily weighted plastic box measuring 2" x 3" x 4", with non-moving, gold-plated fingerpieces protruding from the front panel. You just touch the appropriate dot or dash fingerpiece (on the top, side, or bottom) to generate dots and dashes for operating a transceiver's built-in electronic keyer (or external keyer, if desired). Using a touch paddle typically requires five or ten minutes of practice or "thought reconditioning" (keeping your fingers off fingerpieces when not sending), and then it works great—especially for

\*3994 Long Leaf Drive, Gardendale, AL 35071  
e-mail: <k4twj@cq-amateur-radio.com>



*Photo 1— Itching to try something a bit different but not too extreme in 2007? This new Touch Paddle is the perfect candidate. There are no adjustments because nothing moves (except your fingers), and it works like a champ. The Touch Paddle circuit board (in front of the paddle) is also available for creative-minded operators who prefer to "roll their own." Details are available at <www.cwtouchkeyer.com>.*



*Photo 2— A number of amateurs prefer the simple non-iambic operation of a single-lever paddle, especially for mobile CW, and this new miniature from G4ZPY does it in style. The paddle is available in a solid brass or nickel-plated version, sports full adjustments, and has a magnetic base for holding to metal surfaces. Nice! More information is available at <www.g4zpy.go-plus.net>. (Photo courtesy of G4ZPY)*

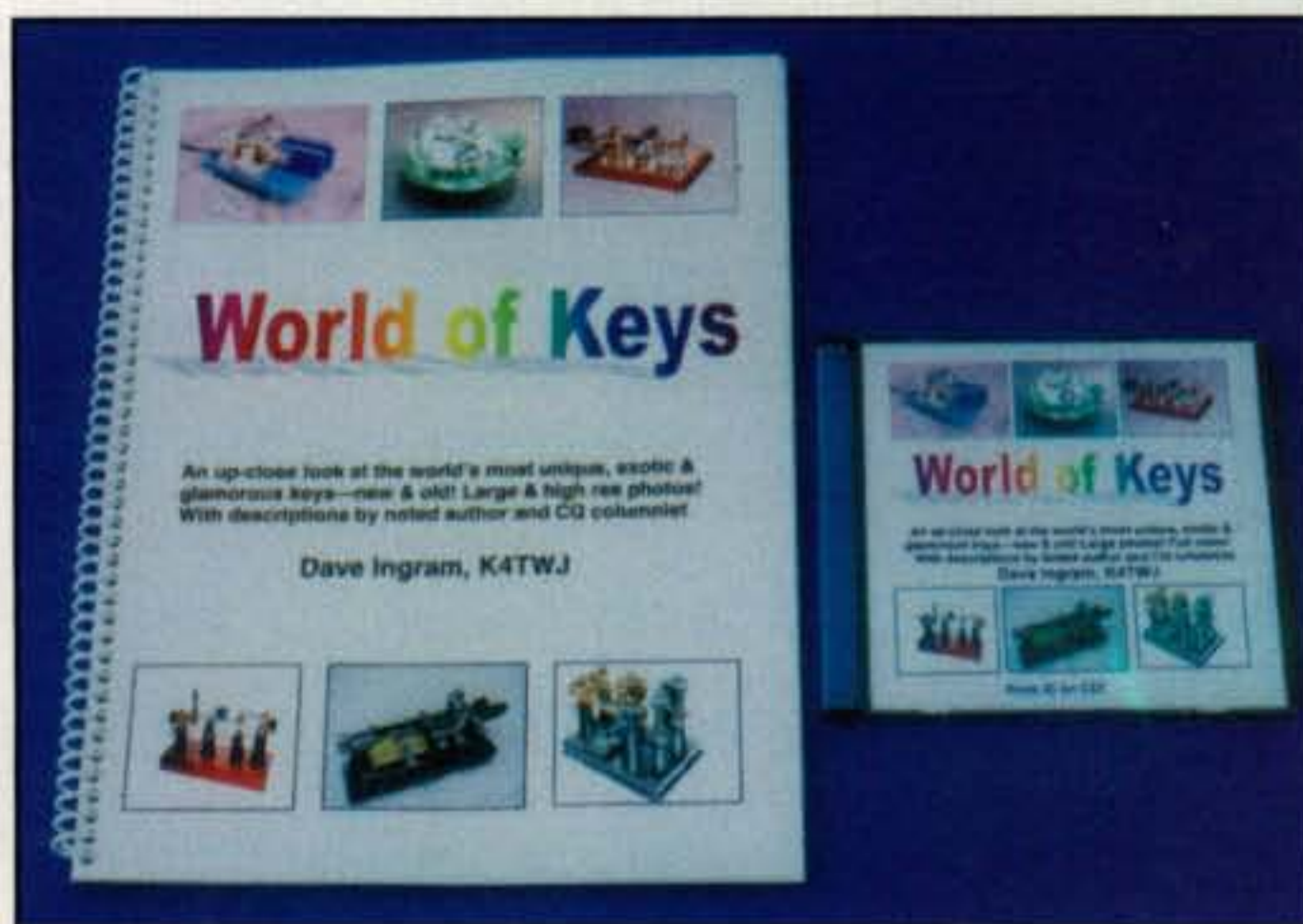
sending high speed CW. Just make sure you can receive/copy as fast as you can send, or replies to high-speed transmissions could leave you in the dust. If you would like to build a Touch Paddle into your own special case or box, incidentally, the paddle's circuit board may be purchased separately as a kit or pre-assembled. Check <www.cwtouchkeyer.com> for more details. Questions? E-mail <cwtouchkeyer@aol.com> or telephone Sumner at 508-285-7600.

Next up is a new miniature single-lever paddle from one of the most well-known names in British-produced keys—Gordon Crowhurst, G4ZPY (photo 2). The paddle measures approximately 2" x 2" and



*Photo 3— This little 18-karat gold beauty is the 2006 Christmas Key from Morse Express (www.MorseX.com). It is 1.25 inches wide and 2 inches long, has full adjustments, and is supplied with cable and plug for instant use. The base is engraved with "Christmas 2006" and the famous Morse Express "Speedy Key" logo. It is a neat Christmas tree ornament you can use for extra CW fun throughout the year. (Photo courtesy of Morse Express)*

Photo 4— Some folks dream of new cars, clothes, and boats at the holidays. CW operators dream of keys, bugs, and paddles. Yes, and my new World of Keys book features high-resolution views and descriptions of prized CW instruments few people have ever seen. It is available in printed form or on computer CD direct to you from me, K4TWJ.



has adjustable contacts with silver tips and a rear adjustment for the main arm. It also has an adjustable pivot point plus a magnetic base for holding firmly on any metal surface. The paddle is available with an all-brass or nickel-plated mechanism. It is the ideal answer for folks having difficulty manipulating dual-lever keys. Gordon devotes a creditable amount of time to hand-producing and fine-polishing his keys and there may be a waiting list, so ordering early is encouraged. More details are available at <www.g4zpy.go-plus.net> or you can e-mail Gordon at <g4zpy@go-plus.net>.

Our third featured CW gem has almost become a holiday tradition: It is the 2006 Christmas Key from the world's largest emporium of keys of all varieties—Morse Express (photo 3). This year's model is loaded with CW glamour. It is 1.25" x 2" in size, under-plated with nickel, finished in 18-karat gold, has an ebony wood knob, and includes full adjustments plus rear contacts for good leverage and a big-key feel. If you prefer pumping rather than paddling your CW and/or need a palm-size key to complement a new mini rig, this little beauty is a winner. For more details (or to browse the world's largest variety of keys for sale), check <www.MorseX.com>. If you prefer just straight ordering, telephone Morse Express direct at 1-800-238-8205.

If you like studying unique design in CW instruments, especially rare and exotic types that few people have ever seen, my new *World of Keys* book is another holiday special with high appeal (photo 4). It goes well beyond my previous *Keys, Keys, Keys* and *Keys II* books, highlighting everything from 50-amp and double-lever hand keys to dual-pendulum vertical bugs, round-based paddles, miniatures of all types, and much more. It is available direct to you from me (Dave Ingram, K4TWJ,

3994 Long Leaf Drive, Gardendale, AL 35071) as a printed book with large, high resolution-pictures (\$18 plus \$4.05 postage), or as a computer CD with large full-color pictures that literally jump off a monitor screen (\$16 plus \$2.50 postage). Like my previous keys books, I'm sure this one is destined to become a prized collectible.

Moving into the microphone category, we are proud to introduce Bob Heil's latest and greatest brain child—a recording-studio-grade mic called the Rock Hall Classic (photo 5). On the outside the new mic looks like Bob's popular amateur radio Classic model, which is an exact reproduction of the famous diamond-style broadcast mic of the 1930s. The big difference, however, is inside the case. It sports one of Heil's new large-diameter and balance-output elements as used in the new PR-series of professional mics. It also has special ports to improve the pickup pattern and enhance overall audio response. An ever-increasing number of amateurs are using professional-model mics with their HF transceivers to produce super-sounding SSB, and this Rock Hall Classic mic is an ideal candidate for such applications. The mic is available from amateur radio dealers nationwide, and more details on it (indeed on the full Heil microphones and headsets line) are available at <www.heilsound.com>. Rock on, Bob!

### Personalized Goodies

Would you like to give your shack a special touch of personality and class? Take a close look at the cool oak callsign desk plate handmade by Cliff Rozar, KC0SDV and shown in photo 6. It is 3 inches tall, 10 inches wide, looks great, impresses visitors, and helps boost your confidence so you can work DX like a bandit. Now that is an accessory every-

## Serious Products for Serious Hams



### SCAF-1 Audio Filter

Make your receiver listener friendly! Variable cut-off audio low-pass filter, 96 db rolloff per octave! Cut-off range frequency 450 Hertz to 3.5 kHz. Absolutely real time, NO delay—perfect for QRQ CW and no monitor problems. Use for CW, Digital modes, and SSB, with headphones or speakers. Super-simple operation, yet wonderfully effective. Sample audio files on our web site. Available as a kit or preassembled.



### Keyers: Logikey K5, Super CMOS-3, CMOS-4

Our keyers simply are the best keyers available — Period. More user friendly by far, more features. Extremely powerful memory functions, yet easy to learn. Extended paddle input timing reduces errors and increases your speed. Can emulate many earlier designs for timing feel, but with full feature set. Use with both positive and negative keyed rigs. Built-in monitor included. Full beacon capability.

For full details see our web site. Forget that built-in keyer in your transceiver. You deserve far better. We have one waiting for you.

### Antenna Rotor Enhancements:

#### TailTwister & Ham-M

Do you own one of these fine rotors? Bring it into the 21st Century! Rotor-EZ adds a unique "Auto-Point" capability plus brake delay, end-point protection, optional complete computer-control capability for logging and contesting programs, and more!

See our web site for full details of this "must have" enhancement.



### Yaesu DXA and SDX series rotors

Add affordable plug-in computer-control capability for far less. See our web site for full details!

[www.idiompress.com](http://www.idiompress.com)

P.O. Box 1985  
Grants Pass, OR 97528



Photo 5— Looking to acquire rich-sounding and broadcast-quality audio from your HF transceiver? Check out Heil Sound's new Rock Hall Classic mic. It looks like Bob's familiar Classic model amateur radio mic, but it is fitted with professional-grade "innards" and helps SSB transceivers sound like a million dollars. More details can be found at [www.heilsound.com](http://www.heilsound.com).

one can use! Cliff, incidentally, is a very skilled woodcrafter, and his work has been featured in several well-known magazines. He is tops! Cliff is also considering making key-chain versions of the wood callsigns, possibly by the time this column appears in print. Check it out (along with Cliff's other specials) at [www.oakcallsigns.com](http://www.oakcallsigns.com) or telephone Cliff toll free at 1-888-425-4332 to order your own big-time radio callsign.

In the "wear it with pride" department, Christine Sokol, K4CES, offers a neat solid-brass belt buckle with your ham call letters, like the one shown in photo 7. The buckles are oval shaped and measure 2.5 inches high by 3.5 inches wide. They are made to accept western-style belts—the type with the snap on the back to permit buckle swaps. The buckles are impressive in brass and are available from [www.itsUrCall.com](http://www.itsUrCall.com).

## Fun Stuff

Our next featured item is a real ham novelty that can be used in several unique ways (photo 8). The device is an ultra-low-power FM broadcast band (88 MHz) transmitter, and its original purpose is for interfacing a portable CD player, MP3, or similar device with your automobile's



Photo 6— Need a shack-enhancing good-luck charm to increase your DXing success? This oak callsign made by Cliff Rozar, KC0SDV, could be the perfect answer. It is a hand-crafted and affordable accessory every amateur can display with pride. Details and other goodies are available at [www.oakcallsigns.com](http://www.oakcallsigns.com).



Photo 7— What's more impressive than a baseball cap with your ham call? A solid-brass belt buckle with the same, and this oval-shaped beauty from [ItsUrCall.com](http://ItsUrCall.com) displays your call with pride. First class for sure!

AM/FM radio. You just plug the transmitter's cable into the player, dial up one of its four switch-selectable frequencies on the radio, and enjoy big-time audio with adjustable bass and treble controls, equalizer, and more. Better yet, forget the CD player and plug the transmitter into the earphone socket of your mobile rig for some really good car-filling sounds. No more straining to hear weak stations or choice DX, as they all come barreling through the automobile's 6x9 speakers. What a gas, and the fun doesn't stop there. Carry the little FM transmitter into your home station, plug it into your main HF transceiver, and then tune it in on one of those personal portable FM pocket radios from a dollar store while moving around the house. It is dandy for following nets, set-frequency activities, DX pile-ups, etc., plus you can add a couple of ultra-low-power walkie-talkies or Palm Radio's new Wireless Key to the mix and have a quick and easy rig remote with an approximate 200-foot range. Cool! These mini FM transmitters are available from Bill Lauterbach, WA8MEA, of DWM



Photo 8— This little gizmo is a miniature 88-MHz FM-band transmitter with an approximate 200-foot range. Its general purpose is interfacing a portable CD player with a car's FM radio, and it also works terrific for routing your ham rig's audio through the car radio. Just plug it into the rig's earphone socket and tune it in on the radio. It is available from [www.HamRadioFun.com](http://www.HamRadioFun.com).



Photo 9— Diving for the car with both hands full and pockets bulging can be a problem, but this new Tenba P301 Grab 'n Go Carry Case from Universal Radio makes it a cinch. The case is padded all around and made from Protek™, a waterproof, rugged, and easily cleaned ballistic nylon. Details at [www.universal-radio.com](http://www.universal-radio.com).

Communications (1-866-740-7128, e-mail: [tinytenna@hotmail.com](mailto:tinytenna@hotmail.com)), or you can order them online at [www.HamRadioFun.com](http://www.HamRadioFun.com).

Do you have problems keeping track of your FM handheld transceiver; its charger, antenna, and extra battery pack; the previously highlighted 88-MHz FM mini transmitter; earbuds; and extra pair of glasses while on short errand runs? Do you need a convenient grab-and-go solution that's also handy



# IRON POWDER and FERRITE from

## AMIDON Associates



Over 12 million pieces of toroids RFI Shield Beads, Rods, E-cores, Pot Cores, "W2FMI" Baluns & Ununs by Jerry Sevick, Coil Forms, RFI Kits, Experimental Kits, and many more.

**Guaranteed  
Low  
Cost!!**

**Fast Reliable Service Since 1963  
Free "Tech Flyer".**

**We welcome small orders from all over the world!**

**In Stock For  
Immediate  
Shipment!**

**CALL, FAX, or EMAIL YOUR ORDER TODAY**

**AMIDON  
Associates**

Tel #: 714-850-4660/800-898-1883 • Fax #: 714-850-1163

Email: [sales@amidoncorp.com](mailto:sales@amidoncorp.com)

[www.amidoncorp.com](http://www.amidoncorp.com)

Photo 10— Need to keep a close eye on the weather? This new MFJ model 193RC wireless weather station fills the bill and it is affordably priced to boot. The system measures indoor and outdoor temperatures, wind speed, humidity, and more. A small remote sensor can be placed up to 300 ft. away from the indoor unit. More details at [www.mfjenterprises.com](http://www.mfjenterprises.com).

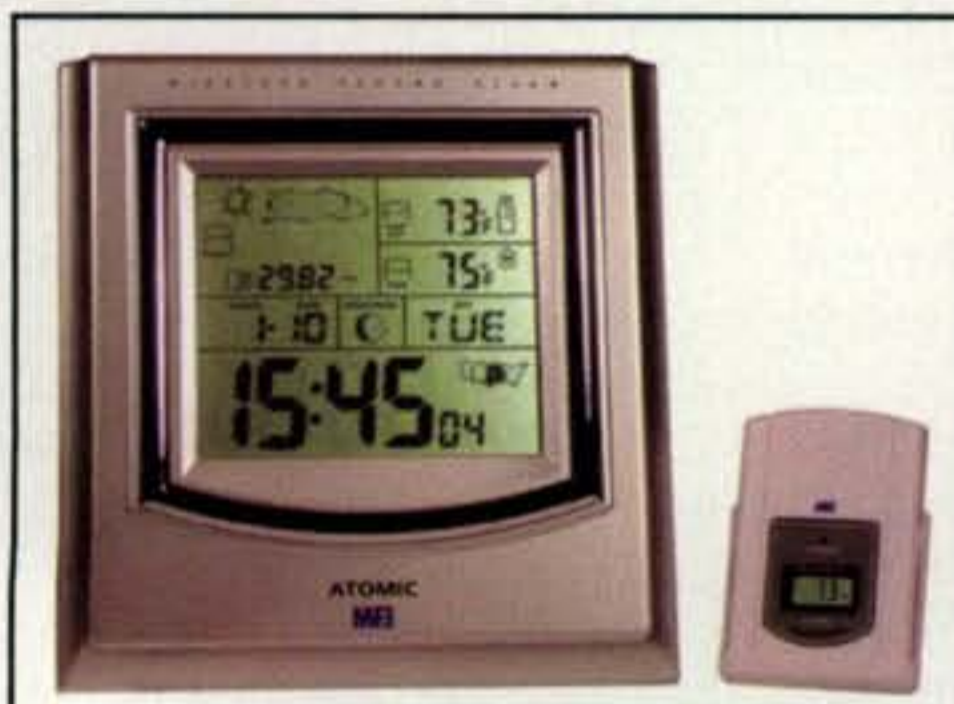


Photo 11— The one gift that keeps on giving throughout the year, a subscription to CQ and/or its sister publications, Popular Communications and CQ VHF.

for emergency preparedness or hamfest fleamarket shopping? Universal Radio has the answer with its new Tenba P301 Carry Case (photo 9). It measures 6.5" x 8.5" x 5", is fully padded, and can be carried by its handgrip, shoulder strap, or belt loop. It is made from Protek™ cloth, a waterproof, rugged, and easily cleaned ballistic nylon. Universal also carries a full (!) line of amateur radio gear and accessories, including many items not found elsewhere. You can reach Universal Radio at 1-800-431-3939 or browse its catalog at [www.universal-radio.com](http://www.universal-radio.com). They are good folks to know.

Weather-watching radio amateurs will surely find appealing the economy model 193RC Weather Station from MFJ Enterprises shown in photo 10. It displays WWVB referenced time, indoor and outdoor temperatures, and wind speed and direction, plus forecast icons indicate sunny, cloudy, rainy, and stormy conditions. It also includes storm alarms to warn

you of threatening conditions so you can unplug your rig to avoid damage. A remote sensor has a 300-foot range, and the indoor display is 3" x 4" x 1.5". Check it out!

Wrapping up this year's collection of specials is an all-time popular gift guaranteed to please one and all—a subscription to CQ and/or its sister publications *Popular Communications* and *CQ VHF*. Oh the articles, the columns, the horizon-expanding ideas and ads! Check the holiday CQ ad elsewhere in this issue for special prices!

### Conclusion

We have gone past the closing wire and must quickly bow out with brief words of good cheer. I will thus say Happy Holidays to the best folks in the world—our amateur radio friends—and whatever you do, wherever you go, keep your antennas up and keep on hamming! 73, Dave, K4TWJ

## 'Tis The Season

'Tis the season, indeed! In this twelfth and final month of the year, we again shine CQ's bright product spotlight on radio shack accessories, antennas and antenna accessories, and new books—including some "stocking stuffers" we think will be of special interest to you in this festive holiday season. Let's dig right into the goodies.

### Accessories for the Radio Shack

**ZipWraps Automatic Earphone Retractor.** You can eliminate earbud cord tangle with ZipWraps™, the first universal automatic retractor for earbuds, earphones, and headsets. It can be an interesting stocking-stuffer! ZipWraps Automatic Earphone Retractor (MSRP \$9.99) from Digital Innovations (photo A) is the first product designed to tame cables without tedious manual winding.

This cookie-size, trademarked cord organizer extends and retracts cables in a zip with a spring-loaded mechanism that smoothly feeds wires in and out. It stores the entire wire when your ear gear is not in use, and it keeps excess cable safely spooled inside when you're on your cell phone, radio, MP3 player, or gaming system. The result is said to be fewer broken cables, a better audio experience, and no time wasted in fixing cable knots or untangling cords from your briefcase, purse, or body.

For the initial setup, just open the ZipWraps case, loop the midpoint of your earphone cable around the hook inside the device, close the cover, and push a button to engage the spring. ZipWraps will reel in the rest of the cord without the need to manually wind the wire around a wheel.

When you're ready to use your earphones, simply pull the cord out to the desired length and attach the ZipWraps case to your pants, shirt, or belt with the clip provided. The rest of the cable will stay neatly tucked away inside the unit to prevent tangling. When you're done with your session, simply press the button on the side of the unit to automatically retract the cord, and the whole cable will be safely stowed until your next use.

The ZipWraps Automatic Earphone Retractor comes in black and white and is available at Best Buy stores. Contact Digital Innovations LLC, 3436 N. Kennicott, Suite 200, Arlington Heights, IL 60004 (847-463-9000; e-mail: <customersupport@digitalinnovations.com>; on the web: <<http://www.digitalinnovations.com>>).

**Ameritron 75-Amp SPS-75 Switching Power Supply.** The Ameritron SPS-75 switching power supply, at \$359.95, is said to be perfect for Ameritron's popular ALS-500M, 500-watt solid-state amplifier. It gives 75 amps output continuously (photo B).

\*289 Poplar Drive, Millbrook, AL 35054-1674  
e-mail: <[w8fx@cq-amateur-radio.com](mailto:w8fx@cq-amateur-radio.com)>



Photo A— You can say goodbye to tangled earphone cords with the new ZipWraps Automatic Earphone Retractor from Digital Innovations, designed to tame cables for virtually any earphones, earbuds, or headset without tedious manual winding. The ZipWraps Automatic Earphone Retractor comes in black and white and is available at Best Buy stores. (Photo courtesy of Digital Innovations)



Photo B— The new Ameritron SPS-75 switching power supply is said to be perfect for Ameritron's popular ALS-500M, 500-watt solid-state amplifier; it gives 75 amps output continuously. (Photo courtesy of Ameritron)



# ...POWER ON WITH ASTRON

SWITCHING POWER SUPPLIES...



MODEL SS-10TK



MODEL SS-12IF

**SPECIAL FEATURES:**

- HIGH EFFICIENCY SWITCHING TECHNOLOGY SPECIFICALLY FILTERED FOR USE WITH COMMUNICATIONS EQUIPMENT, FOR ALL FREQUENCIES INCLUDING HF
- HEAVY DUTY DESIGN
- LOW PROFILE, LIGHT WEIGHT PACKAGE
- EMI FILTER
- MEETS FCC CLASS B

**PROTECTION FEATURES:**

- CURRENT LIMITING
- OVERVOLTAGE PROTECTION
- FUSE PROTECTION
- OVER TEMPERATURE SHUTDOWN

**SPECIFICATIONS:**

INPUT VOLTAGE: 115 VAC 50/60HZ  
OR 220 VAC 50/60HZ  
SWITCH SELECTABLE  
OUTPUT VOLTAGE: 13.8VDC

AVAILABLE WITH THE FOLLOWING APPROVALS: UL, CUL, CE, TUV.



MODEL SS-18

**DESKTOP SWITCHING POWER SUPPLIES**

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SS-10	7	10	1 1/2 x 6 x 9	3.2
SS-12	10	12	1 1/2 x 6 x 9	3.4
SS-18	15	18	1 1/2 x 6 x 9	3.6
SS-25	20	25	2 1/4 x 7 x 9 1/2	4.2
SS-30	25	30	3 1/4 x 7 x 9 1/2	5.0



MODEL SS-25M

**DESKTOP SWITCHING POWER SUPPLIES WITH VOLT AND AMP METERS**

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SS-25M*	20	25	2 1/4 x 7 x 9 1/2	4.2
SS-30M*	25	30	3 1/4 x 7 x 9 1/2	5.0



MODEL SRM-30

**RACKMOUNT SWITCHING POWER SUPPLIES**

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25	20	25	3 1/2 x 19 x 9 1/2	6.5
SRM-30	25	30	3 1/2 x 19 x 9 1/2	7.0

**WITH SEPARATE VOLT & AMP METERS**

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M	20	25	3 1/2 x 19 x 9 1/2	6.5
SRM-30M	25	30	3 1/2 x 19 x 9 1/2	7.0



MODEL SRM-30M-2

**2 ea SWITCHING POWER SUPPLIES ON ONE RACK PANEL**

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25-2	20	25	3 1/2 x 19 x 9 1/2	10.5
SRM-30-2	25	30	3 1/2 x 19 x 9 1/2	11.0

**WITH SEPARATE VOLT & AMP METERS**

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M-2	20	25	3 1/2 x 19 x 9 1/2	10.5
SRM-30M-2	25	30	3 1/2 x 19 x 9 1/2	11.0



MODEL SS-12SM/GTX



MODEL SS-10EFJ-98

**CUSTOM POWER SUPPLIES FOR RADIOS BELOW**

- EF JOHNSON AVENGER GX-MC41
- EF JOHNSON AVENGER GX-MC42
- EF JOHNSON GT-ML81
- EF JOHNSON GT-ML83
- EF JOHNSON 9800 SERIES
- GE MARC SERIES
- GE MONOGRAM SERIES & MAXON SM-4000 SERIES
- ICOM IC-F11020 & IC-F2020
- KENWOOD TK760, 762, 840, 860, 940, 941
- KENWOOD TK760H, 762H
- MOTOROLA LOW POWER SM50, SM120, & GTX
- MOTOROLA HIGH POWER SM50, SM120, & GTX
- MOTOROLA RADIUS & GM 300
- MOTOROLA RADIUS & GM 300
- MOTOROLA RADIUS & GM 300
- UNIDEN SMH1525, SMU4525
- VERTEX — FTL-1011, FT-1011, FT-2011, FT-7011

**NEW SWITCHING MODELS**

- SS-10GX, SS-12GX
- SS-18GX
- SS-12EFJ
- SS-18EFJ
- SS-10-EFJ-98, SS-12-EFJ-98, SS-18-EFJ-98
- SS-12MC
- SS-10MG, SS-12MG
- SS-101F, SS-121F
- SS-10TK
- SS-12TK OR SS-18TK
- SS-10SM/GTX
- SS-10SM/GTX, SS-12SM/GTX, SS-18SM/GTX
- SS-10RA
- SS-12RA
- SS-18RA
- SS-10SMU, SS-12SMU, SS-18SMU
- SS-10V, SS-12V, SS-18V

The new SPS-75 is tiny (6 $\frac{1}{2}$ " W  $\times$  3 $\frac{1}{2}$ " H  $\times$  10" D) and weighs in at just 7.8 lbs. It has less than 100 mV peak-to-peak ripple under 75 amps full load, and load regulation is better than 1.5% under full load. The SPS-75 features reverse polarity protection, brownout input protection, and both over-current and over-temperature protection. The unit features a thermal-controlled quiet fan.

The "Output Boost" feature steps up the output from 13.8 to 14.2 VDC to compensate for line loss. Input is 108–132 VAC, 50/60 Hz. The unit draws 18 amps and can even be used to charge a car battery.

To order, check out various product details, get a free catalog, or find the name of your nearest dealer, contact Ameritron, 116 Willow Road, Starkville, MS 39759 (1-800-713-3550; e-mail: <ameritron@ameritron.com>; on the web: <<http://www.ameritron.com>>).

**RIGtalk USB Rig Control Interface and More.** Small enough to be a prime stocking stuffer, the RIGtalk USB Rig Control Interface (photo C) from West Mountain Radio plugs into your computer's USB port. It allows software control of programming of compatible transceivers, and cables are available for ICOPM Ten-Tec, and Yaesu radios. Unlike the firm's popular RIGblaster series, RIGtalk enables rig control functions but not sound-card applications. The new unit also is intended for use with many logging and rig control programs.

If you're confused as to just what RIGtalk does, the firm has a detailed explanatory page on its website. Simply, it's best described as the USB version of the ICOM CT-17 Serial Interface. A RIGtalk unit enables the amateur radio function of "rig control" and a RIGblaster enables "soundcard applications." Rig control sends frequency, band, mode, and other operational data between the radio and the computer. Soundcard applications are modes such as PSK, SSTV, and RTTY, which require an interface for audio between the radio and the computer soundcard and a serial interface to provide PTT, CW, and FSK keying.

RIGtalk emulates a serial port to the computer software while connecting to a USB port of the computer. As with many USB devices, drivers are first installed, and then RIGtalk is plugged in and Windows® completes the installation. This is especially beneficial for newer computers that do not have real serial ports. RIGtalk is a natural for ICOM and Ten-Tec transceivers.



Photo C— The RIGtalk USB Rig Control Interface from West Mountain Radio plugs into your computer's USB port, and it allows software control of programming of compatible transceivers. (Photo from the West Mountain Radio website)

Photo D— New versions of Palm's legendary IR "Code Cube" electronic keyer and PPK portable straight key have been released with IR Link capability. They are distributed by Morse Express. The Code Cube, a prime stocking stuffer candidate, is shown here. (Photo from the Morse Express website)



Also available from West Mountain Radio is the RIGBlaster Plug & Play, a USB radio-to-computer interface, as well as several other new products. Check the firm's website for information on these impressive new offerings.

For more information, or to place an order, contact West Mountain Radio, 18 Sheehan Avenue, Norwalk, CT 06854 (1-888-937-8686; e-mail: <sales@westmountainradio.com>; <<http://www.westmountainradio.com>>).

**Palm Cordless Keying Products Distributed by Morse Express.** Morse Express has entered the "cordless keying" derby, so to speak, with its carrying of several new products from the German firm Palm Radio. Palm recently released an Infrared Link option for its telegraph keys and paddles, allowing a transmitter to be operated from as far away as 15 feet without a cable. The IR Link system consists of an IR transmitter and receiver, which can be built into existing equipment or operated standalone.

New versions of Palm Radio's IR "Code Cube" electronic keyer (photo D) and its PPK ("Palm Portable Key") portable straight key have been released with IR Link capability. There also is a standalone IR transmitter which can be used with any straight key. The IR receiver is provided as a self-contained unit and as a module, which can easily be built into a transceiver.

Palm Radio products, including the new IR Link series, are distributed in North America by Morse Express. For more information, contact Morse Express, 10691 E. Bethany Dr., Suite 800, Aurora, CO 80014; (1-800-238-8205; e-mail: <info@MorseX.com>; on the web: <<http://www.MorseX.com>>).

## Antennas and Antenna Accessories

**MFJ Weather-Proof MFJ-4602 Antenna Feedthrough Panel.** The weather-proof MFJ-4602 Antenna Feedthrough Panel (photo E) from MFJ Enterprises brings various anten-



Photo E— The weather-proof MFJ-4602 Antenna Feedthrough Panel from MFJ Enterprises brings three coax-fed HF/VHF/UHF antennas, balanced lines, random-wire antennas, and ground wires into your shack without the need for drilling through walls. (Photo courtesy of MFJ Enterprises)

nas, feedlines, and grounds into your shack without drilling through walls. The MFJ-4602 is modestly priced at \$59.95.

The Antenna Feedthrough Panel mounts in your windowsill, and it lets you feed three coax-fed antennas, balanced lines, random-wire antennas, and grounds without drilling through the wall. To install it, you simply place it on your window sill and close the window. One cut customizes it for any window up to 48 inches, and you can use it horizontally or vertically. High-quality pressure-treated wood with excellent 3/4-inch thick insulating properties is painted with a heavy coat of white outdoor enamel paint.

The unit's edges are sealed by weatherstripping, which seals and insulates against all weather conditions to give years of trouble-free service. The size is 3/4" D x 3 1/2" H x 48" W.

Inside/outside stainless-steel plates bond all coax shields to ground. A stainless-steel ground post brings outside ground connections inside. In addition, three Teflon® SO-239 coax connectors and ceramic balanced-line/random-wire feedthrough insulators are used.

The MFJ-4602 is protected by MFJ's famous No Matter What™ one-year limited warranty. Under it, MFJ will repair or replace, at their option, your MFJ products no matter what for one complete year.

For more information, to place an order, to get a free catalog, or to find your nearest dealer, contact MFJ Enterprises, Inc., 300 Industrial Park Rd., Starkville, MS 39759 (1-800-647-1800; e-mail: <mfj@mfjenterprises.com>; <http://www.mfjenterprises.com>).

### From the Bookshelf

**New from the ARRL.** First up this time is *The ARRL Ham Radio License Manual* (fig. 1). It's said to be all you need to become an amateur radio operator and get your first ham radio license. Featuring easy-to-understand, "bite-sized" sections, you can use this book to help you pass the 35-question Technician license test. It includes the latest question pool with answer key. Designed for self-study and for classroom use, it's intended for all newcomers, instructors, and schoolteachers.

The \$24.95, 283-page book is said to be the most popular introduction to amateur radio available. *The ARRL Ham Radio License Manual* can be your ticket to joining the ranks of ham radio operators. Use this book to discover the appeal of ham radio.

You can use this book to study for your first license exam. It presents infor-

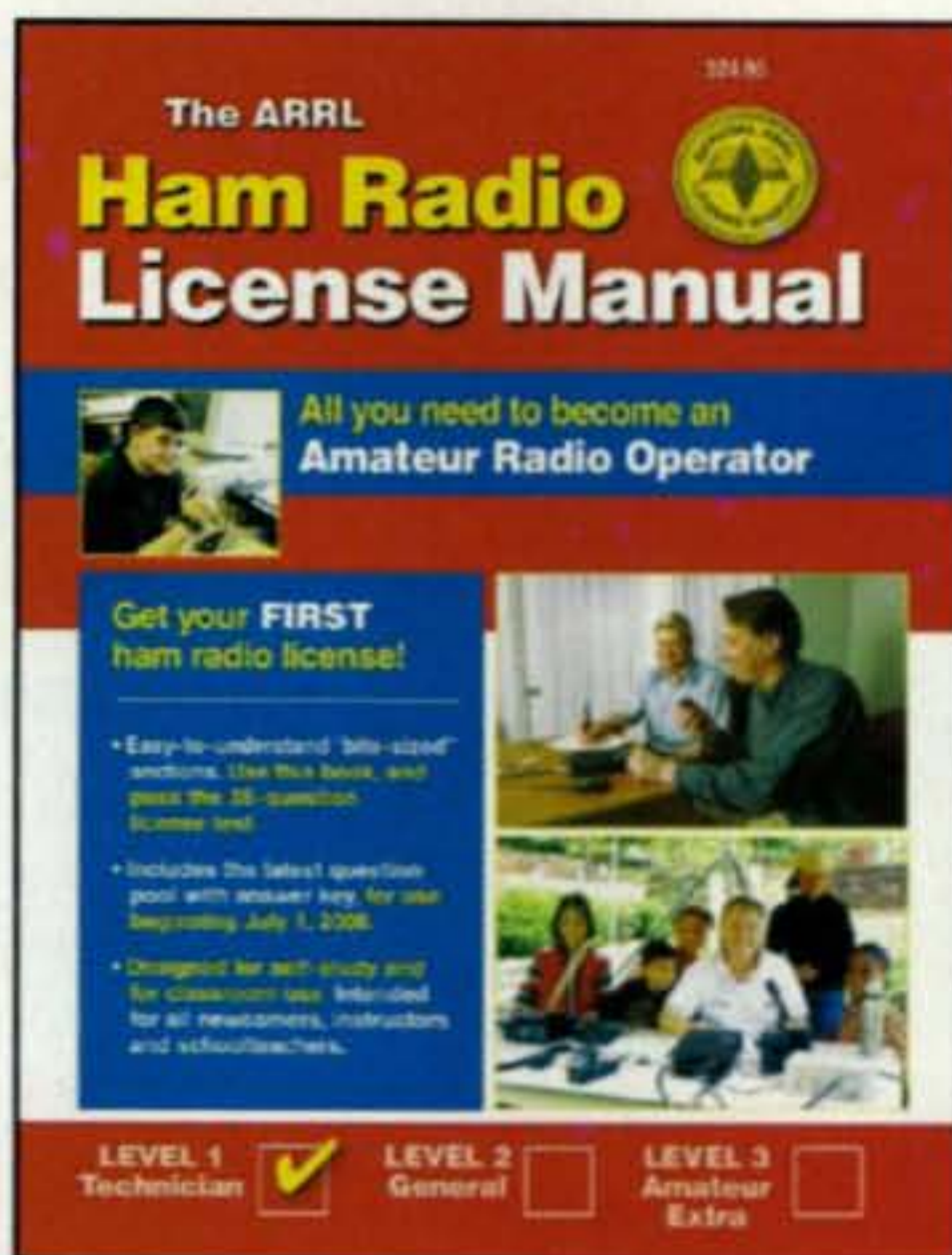


Fig. 1—The ARRL HAM Radio License Manual is said to be the most popular introduction to amateur radio available—your ticket to joining the ranks of ham radio operators. Use this book to discover the appeal of the amateur radio hobby. (Image courtesy of the ARRL)

mation you need to pass the exam and become an effective operator. Small sections are covered individually: Welcome to Amateur Radio; Radio and Electronics Fundamentals; Operating Station Equipment; Communicating

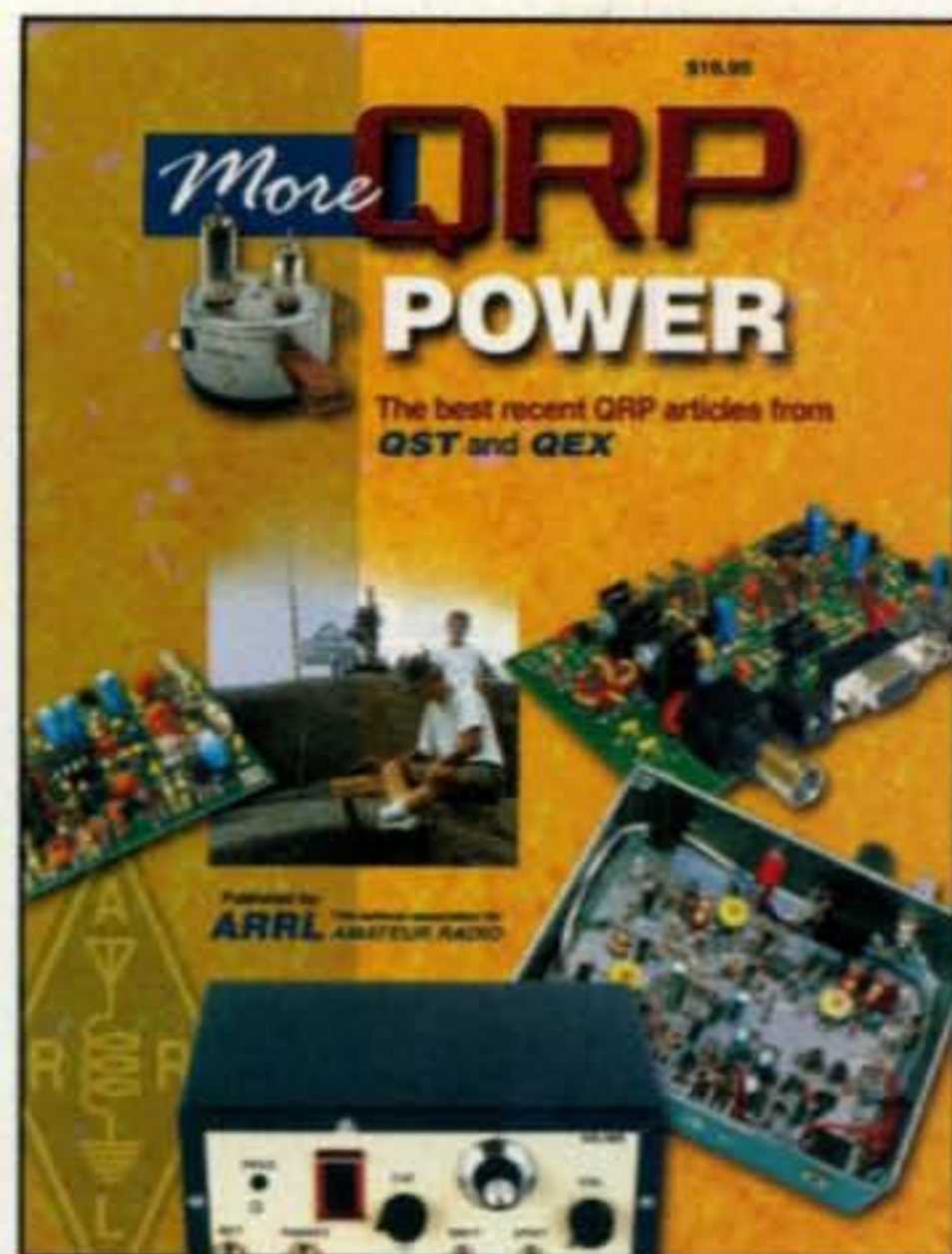


Fig. 2—The ARRL's new More QRP Power book describes more equipment, accessories, and antennas for low-power radio operating. The book is an anthology of excellent QRP-related articles from recent issues of QST and QEX magazines. (Image courtesy of the ARRL)

with Other Hams; Licensing Regulations; Operating Regulations; and Radio Safety. At the end of the book is the entire Technician Question Pool.

Next up is the ARRL's new *More QRP Power* book (fig. 2), which describes

**THE HF EQUATION FOR SUCCESS**

**ISOTRON**

Antennas for 160 - 6 meters  
The unique design gives it a leading edge.  
Great Performance • Easy Installation

[www.isotronantennas.com](http://www.isotronantennas.com)

Successful Since 1980 **719-687-0650** CC & R Friendly  
BILAL COMPANY

137 Manchester Dr. • Florissant, CO 80816

**POWERPORT IC-91AD**

**Leather or Neoprene pouches**

New for the Icom IC-91AD  
Beautiful glove leather with a spring steel belt clip or sporty neoprene in red or black.  
Well padded with water proof material.  
STARTING AT \$14.49

HI-N5 HI-6

CUTTING EDGE ENT. 800 206-0115 [www.powerportstore.com](http://www.powerportstore.com)

**K2 Transceiver Now with DSP!**

Why pay \$2000 + for world-class performance? Our K2/100 (100W) and K2 (10W) SSB/CW HF transceiver kits top the charts for far less—K2 base pricing starts at \$629. And now you can add our internal **KDSP2** unit, with auto-notch, noise reduction, and versatile audio filtering. Recent kit updates make the K2 an even better value, and easier to build than ever. Other new kits include **Transverters** for 50/144/222/432 MHz, and the **KRC2 Band Decoder**. See our web site for details.

**ELECRAFT**  
[www.elecrafft.com](http://www.elecrafft.com)

Phone: (831) 662-8345 [sales@elecrafft.com](mailto:sales@elecrafft.com)  
P.O. Box 69, Aptos, CA 95001-0069

VISA MasterCard

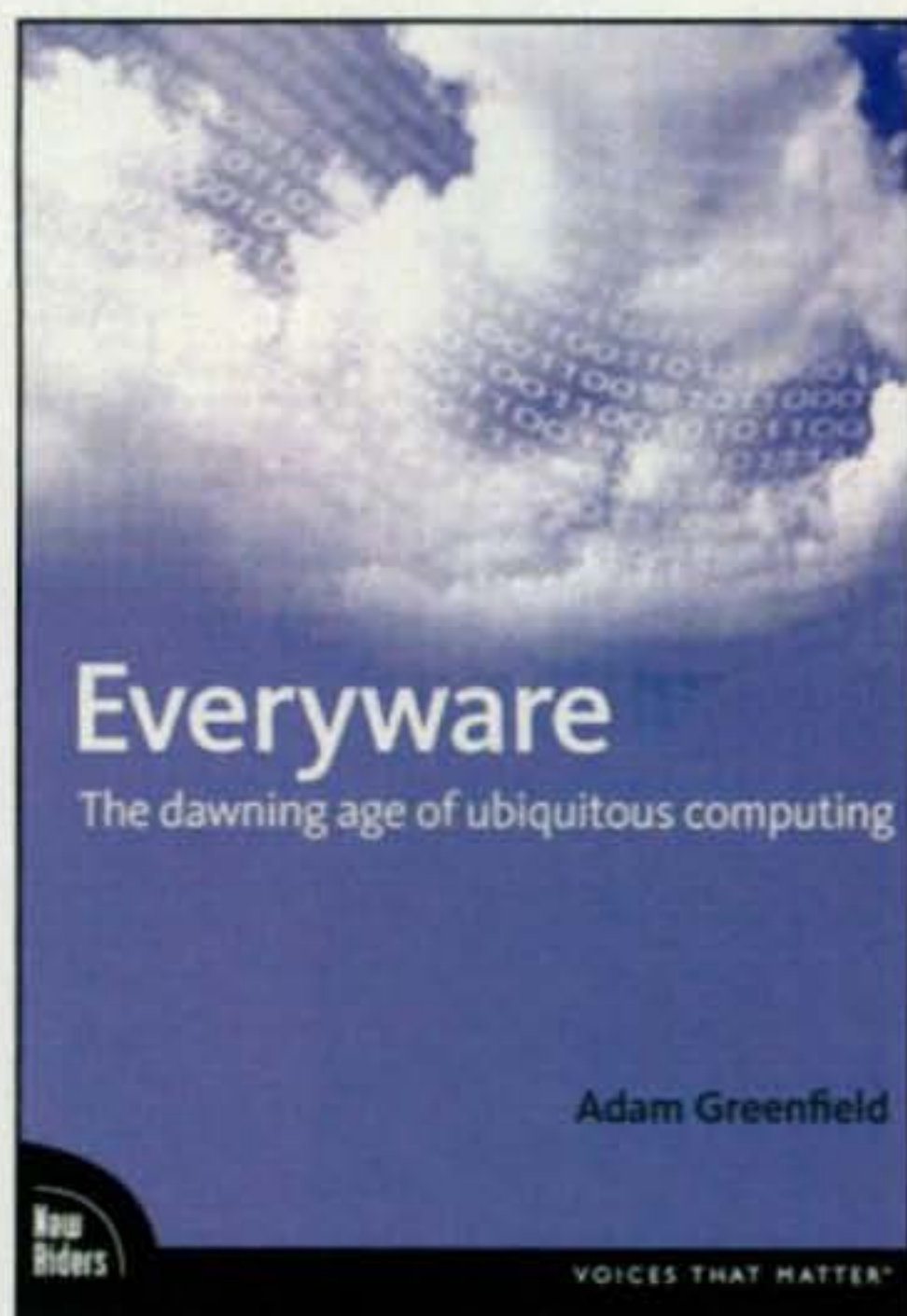


Fig. 3—Adam Greenfield's *Everywhere: The Dawning Age of Ubiquitous Computing* book explores the new technologies, practices, and innovations that make everywhere so powerful and inevitable—and maybe even just a bit scary. (Image from the Peachpit Press website)

more equipment, accessories, and antennas for low-power radio operating—that is, radio operating with a low power of 5 watts or less.

In the spirit of the popular *QRP Classics* and *QRP Power* books published in the 1990s, *More QRP Power* is an anthology of articles from recent issues of *QST* and *QEX* magazines covering construction practices, transceivers, transmitters, receivers, accessories, and antennas. The book contains dozens of fun projects and articles to help you assemble or improve a QRP station for home or travel.

The book suggests that you give QRP a try, and if you are already addicted, it suggests that you try a new antenna or accessory. Whether you want to build a complete station from scratch or just an item or two to use with your kit or commercial QRP transceiver, you'll find it in *More QRP Power*. The 176-page book is \$19.95. Contact the American Radio Relay League, 225 Main Street, Newington, CT 06111-1494 (1-888-277-5289; e-mail: <pubsales@arrl.org>; on the web: <<http://www.arrl.org/shop>>).

**Everyware: The Dawning Age of Ubiquitous Computing.** Ubiquitous computing—almost imperceptible, but everywhere around us—is rapidly becoming a reality. How will it change

Photo F—Marketed with the premise that “decorating your tree should not start with frustration,” Kleer-eze™ hangers are said to be the key holiday gadget when it comes to hanging those special ornaments you don't know how else to hang. (Photo courtesy of Grando Enterprises)



us? How can we shape its emergence?

Smart buildings, smart furniture, smart clothing, smart bathtubs, networked street signs and self-describing soda cans, to gestural interfaces like those seen in the popular movie *Minority Report*. The RFID tags, for example, are now embedded in everything from credit cards to the family pet.

All of these are facets of the ubiquitous computing that author Adam Greenfield calls “everyware.” In a series of brief, thoughtful meditations, Greenfield explains how everywhere is already reshaping our lives, transforming our understanding of the cities we live in, the communities we belong to—and the way we see ourselves.

Greenfield's *Everywhere: The Dawning Age of Ubiquitous Computing* (\$24.95, 272 pages, Peachpit Press; see fig. 3) explores the new technologies, practices, and innovations that make everywhere so powerful and inevitable. If you've ever sensed both the promise of the next wave of computing and the challenges it represents for all of us, this may be the book for you. *Everyware* aims to give its readers the tools to understand the “next computing,” and make the kind of wise decisions that will shape its emergence in ways that support the best in us.

If this one sounds like a “must read” stocking stuffer, then visit your local bookstore, or for more information, contact Pearson Education, 200 Old Tappan Road, Tappan, NJ 07675 (1-800-283-9444 or 1-800-922-0579; e-mail: <info@peachpit.com>; on the web: <<http://www.peachpit.com>>).

### Something Seasonal Indeed!

**Crafty Holiday Gadget.** This stocking-stuffer may not really be a classic “ham item,” but at this rapidly approaching holiday season it's certainly worth a look anyway. Why? What to do with all those

wonderful handmade, “crafty” tree ornaments? You know, the decorative wood or ceramic creations or the children's amazing art products, and the like—maybe even small ham radio awards, badges, and such. A new product from Grando Enterprises is reported to be the key holiday gadget when it comes to hanging those special ornaments you don't know how else to hang. This year, finally, no more wounded hands and tangled hooks!

Kleer-eze™ is a new, completely different ornament hanger (see photo F). Kleer-eze hangers are made from recycled, polycarbonate plastic, making them both flexible and strong. The hold mechanism allows the hanger to “click” to close, securely attaching ornaments and other decorations. They come in both clear and green to better blend with the foliage and to show off the beauty of your tree.

For more information, or to place an order, contact Grando Enterprises, PMB 2318, 1420 N.W. Gilman Blvd., Suite 2, Issaquah, WA 98027 (425-256-0119; e-mail: <info@kleer-eze.com>; <<http://www.kleer-eze.com>>).

### Wrap-Up

That's all for this time, gang. Next time, more “What's New.” See you then.

*Overheard:* Darn it! Seems that every time I manage to get the ends to meet, some joker goes and moves the ends on me! 73, Karl, W8FX

**Note:** Listings in “What's New” are not product reviews and do not constitute a product endorsement by CQ or the column editor. Information in this column is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of this column is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.

# Holiday Gifts Ideas from CQ ...

## Heathkit - A Guide to the Amateur Radio Products



by Chuck Penson, WA7ZZE

Greatly expanded 2nd Edition- a must for collectors and Ham history buffs. A terrific trip down memory lane for any Ham who was there or wishes he had

been. Pick up this 328 page volume and you won't be able to put it down!

Order No. HEATHKIT **\$29.95**

## The NEW Shortwave Propagation Handbook



by W3ASK, N4XX & K6GKU

This authoritative book on shortwave propagation is your source for easy-to-understand information on sunspot activity, propagation predictions, unusual propagation effects and do-it-yourself forecasting tips.

Order No. SWP **\$19.95**

## Understanding, Building & Using Baluns & Ununs



by Jerry Sevick, W2FMI

The successor to the popular and authoritative Baluns and Ununs. Great deal of new tutorial material, and designs not in previous book, with crystal clear explanations of how and why they work.

Order No. 2BU **\$19.95**

## Ham Radio Magazine Anthologies



Now you can enjoy collections of the best material published in *Ham Radio* magazine, conveniently arranged by subject and by original publication date. Choose your interest, your time period, and choose your Anthology.

**Homebrewing Techniques** - This anthology brings together the most useful and practical advice and techniques for the person who wants to build anything from small solid state projects to beam antennas. Order No. AHOME **\$19.95**

**Test Equipment & Repair Techniques** - From building test gear to trouble-shooting the rig, this anthology of the best articles on the subject has been carefully selected to meet today's needs. Includes techniques and devices that work and are easily duplicated, and gives today's Hams a much-needed helping hand at solving equipment problems on their own.

Order No. ATEST **\$19.95**

**Ham Radio Anthology: Antennas** - Carefully selected, these two antenna anthologies cover all types of antenna designs and theory from 160 meters through microwaves. All articles have been selected to be as timely and valuable to today's Ham as they were to *Ham Radio* readers of the time. These first two volumes will be followed by two additional volumes.

Antennas - 1968-1972.....Order No. ANT1 **\$19.95**

Antennas - 1973-1975.....Order No. ANT2 **\$19.95**

Buy all 4 Anthologies for only \$75 - Save \$\$ and get FREE Shipping & Handling!



## 2007/08 calendars

15-Month Calendars - January 2007 through March 2008

These fifteen month calendars (January 2007 through March 2008) include dates of important Ham Radio events such as major contests and other operating events, meteor showers, phases of the moon, and other astronomical information, plus important and popular holidays. These calendars are not only great to look at, they're truly useful, too!



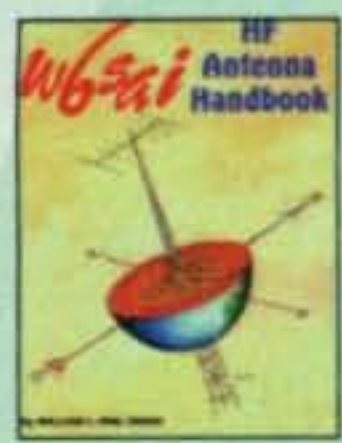
**Classic Radio Calendar** - Fifteen magnificent full-color vintage radio images including Comcraft, Collins, GROSS, Heathkit, Hammarlund, Millen, National, Hallicrafters, E.F. Johnson, Allied Radio and more! Order No. CCAL

**Amateur Radio Operators Calendar** - This year's calendar brings you 15 spectacular images of some of the biggest, most photogenic shacks, antennas, scenics and personalities. These are the people you work, shacks you admire, the antenna systems you dream about! Order No. HRCAL

Shipping & Handling: U.S. & Possessions - add \$5.00 for the first item, \$2.50 for the second and \$1.00 for each additional item. FREE shipping on orders over \$75. Foreign-calculated by order weight and destination and added to your credit card charge. Magazine prices include shipping and handling charges.

# more great gifts!

**\*\*Spend \$75 and get FREE shipping!**



## W6SAI HF Antenna Handbook

by Bill Orr, W6SAI

One of ham radio's most respected authors, W6SAI was known for his easy-to-understand, down-to-Earth, writing style. In keeping with this tradition, this book is a thoroughly readable text for any antenna enthusiast, jam-packed with dozens of inexpensive, practical antenna projects that work!

Order No. HFANT **\$19.95**

## The Short Vertical Antenna and Ground Radial

by Sevick, W2FMI

This small but solid guide walks you through the design and installation of inexpensive, yet effective short HF vertical antennas. With antenna restrictions becoming a problem, this book could keep you on the air!



Order No. SVERT **\$10.00**

## MIL SPEC Radio Gear

Korean to Present Day  
by Mark Francis, KIØPF

Detailed write-ups for many familiar sets: PRC-25/-77, RT-68, PRC-1099, GRC-106, GRR-5, R-392 and more. Over 230 pages of operation, modification, and maintenance tips and info, including 200+ illustrations. Useful hints and mods, and more!



Order No. MILSPEC **\$27.95**

## The Complete DXer

Third Edition

The joy of the chase, the agony of defeat, the thrill of victory are the stuff of The Complete DXer, a book that is almost as seductive as the DX chase it describes. It excites, it entertains, it teaches!



Order: COMPDXer **\$19.95**

## VHF Propagation

A Guide For Radio Amateurs

by Neubeck, WB2AMU & West, WB6NOA

A comprehensive source-book on VHF propagation. Trop Ducting, Aurora, Meteor Scatter, TEP Sporadic-E, Combo Modes and more!

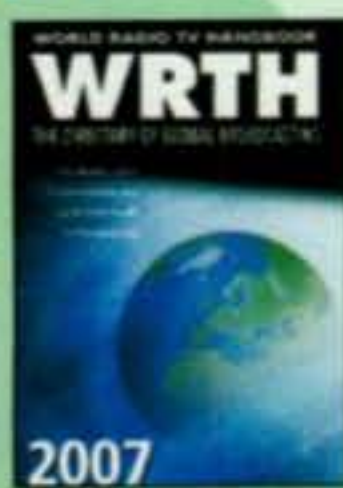


Order: VHFPROP **\$15.95**

## 2007 World Radio TV Handbook

The Directory of Global Broadcasting

The most up-to-date information on medium-wave, shortwave, and FM broadcasts and broadcasters. Includes articles on topics of great interest to both listeners and dxers, reviews of the latest equipment, updated maps showing SW transmitter sites and more.



Order No. WRTH **\$29.95**

## Passport to World Band Radio

Edition 2007

The World's #1 selling shortwave guide! Have the world at your fingertips! Details on what to buy and where to tune.



Order No. PASS **\$22.95**

## Contesting in Africa

Multi-Multi on the Equator

by Roger Western, G3SXW & the Voo Doo Contest Group

A compelling array of contesting and DXing experiences from one of the most unique operating venues on earth - the African continent.



Order No. AFRI **\$19.95**

## videos special!

NOW ONLY

**\$9.95 each** (Reg. \$11.95)



- Ham Radio Horizons: The Video Order No. VHOR
- Getting Started in VHF ..... Order No. VVHF
- Getting Started in Ham Radio..... Order No. VHR
- Getting Started in DXing ..... Order No. VDX
- Getting Started in Packet Radio Order No. VPAC
- Getting Started in Amateur Satellites Order No. VSAT
- Getting Started in Contesting.. Order No. VCON

Buy all 7 for your Club for only **\$59.95**

## cds Ham Radio Magazine on CD

Enjoy quick and easy access to every issue of this popular magazine, broken down by years!

- Sale only \$54.95 ea.**
- Three sets, each containing 4 CDs
- 1968-1976 Order No. HRCD1 ~~\$59.95~~
- 1977-1983 Order No. HRCD2 ~~\$59.95~~
- 1984-1990 Order No. HRCD3 ~~\$59.95~~
- Buy All 3 Sets and Save \$49.90!

Order No. HRCD Set **\$129.95** (Reg. \$149.95)

**SPECIAL! Save \$5 on each CD set**



Call 1-800-853-9797 or FAX your order to 516-681-2926  
You can also order on our web site: [www.cq-amateur-radio.com](http://www.cq-amateur-radio.com)



# RSGB Books

**\*\*Spend \$75  
and get FREE  
shipping!**



## Guide to VHF/UHF Amateur Radio

By Ian Poole, G3YWX

RSGB, 2000 Ed., 112 pages

Everything you will need to help you enjoy VHF/UHF to the fullest. Help choosing the right transmitter, receiver, antenna, utilizing the correct part if each band and more!

Order No. RSGVUAR **\$14.50**



## HF Antenna Collection

RSGB, 1st Ed., 1992. 233 pages. A collection of outstanding articles and short pieces which were published in Radio Communication magazine during the period 1968-89. Includes ingenious designs for single element, beam and miniature antennas, as well providing comprehensive information about feeders, tuners, baluns, testing, modeling, and how to erect your antenna safely.

Order: RSHFAC **\$16.00**



## IOTA Directory— 11th Edition

Edited by Roger Balister, G3KMA. RSGB, 2002 Ed., 128 pages

This book is an essential guide to participating in the IOTA (Islands on the Air) program. It contains everything a newcomer needs to know to enjoy collecting or operating from islands for this popular worldwide program.

Order: RSIOTA **\$15.00**

## Antenna Toolkit 2

By Joe Carr, K4IPV

RSGB & Newnes, 2002 Ed.

256 pages. A definitive design guide for sending and receiving radio signals. Together with the powerful suite of CD software included with this book, the reader will have a complete solution for constructing or using an antenna; everything but the actual hardware!



Order: RSANTKIT2 **\$40.00**



## Practical Projects

Edited by Dr. George Brown, M5ACN RSGB 2002 Ed, 224 pages. Packed with around 50 "weekend projects," Practical Projects is a book of simple construction projects for the radio amateur and others interested in electronics. Features a wide variety of radio ideas plus other simple electronic designs and a handy "now that I've built it, what do I do with it?" section. Excellent for newcomers or anyone just looking for interesting projects to build.

Order: RSPP **\$19.00**

## Low Power Scrapbook

RSGB. © 2001, 320 pages.

Choose from dozens of simple transmitter and receiver projects for the HF bands and 6m, including the tiny Oner transmitter and the White Rose Receiver. Ideal for the experimenter or someone who likes the fun of building and operating their own radio equipment.

Order: RSLPS **\$19.00**



## The Antenna File

RSGB. ©2001. 288 pages.

50 HF antennas, 14 VHF/UHF/SHF antennas, 3 receiving antennas, 6 articles on masts and supports, 9 articles on tuning and measuring, 4 on antenna construction, 5 on design and theory, and 9 Peter Hart antenna reviews. Every band from 73kHz to 2.3GHz!

Order: RSTAF **\$32.00**



## The Antenna Experimenter's Guide

RSGB. 2nd Ed, 1996. 160 pages. Takes the guesswork out of adjusting any antenna, home-made or commercial, and makes sure that it's working with maximum efficiency.

Describes RF measuring equipment and its use, constructing your own antenna test range, computer modeling antennas. An invaluable companion for all those who wish to get the best results from antennas!

Order: RSTAEG **\$28.00**



## HF Amateur Radio

RSGB. 2002 Ed.

The HF or short wave bands are one of the most interesting areas of amateur radio. This book takes the reader through setting up an efficient amateur radio station, which equipment to choose, installation, the best antenna for your location and MUCH more.

Order: RSHFAR **\$21.00**

## Amateur Radio Mobile Handbook

RSGB. 2002 Ed., 128 pages.

The Amateur Radio Mobile Handbook covers all aspects of this popular part of the hobby. It includes operating techniques, installing equipment in a vehicle and antennas, as well as maritime and even bicycle mobile. This is essential reading if you want to get the most out of your mobile station.



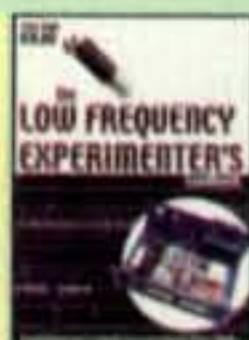
Order: RSARMH **\$21.00**

## The Low Frequency Experimenter's Hdbk

By Peter Dodd, G3LDO

RSGB, 2000 Ed., 296 pages.

An invaluable and unique reference written to meet the needs of amateurs and experimenters interested in low power radio techniques below 200sHz.



Order: RSLFEH **\$32.00**

## Radio & Electronics Cookbook



By George Brown, M5ACN

RSGB. 2001 Ed.

A collection of the very best weekend projects from D-I-Y RADIO magazine. Step-by-step instructions make this book ideal for hams wanting to build their skills and knowledge.

Order: RSREC **\$28.00**

## RSGB Prefix Guide

By Fred Handscombe, G4BWP.

RSGB. 6th Ed., 2003. 48 pages.

This book is an excellent tool for the beginner and the experienced hand alike. Designed with a "lay flat" wire binding for ease of use the new "Prefix Guide" is a must for every shack.



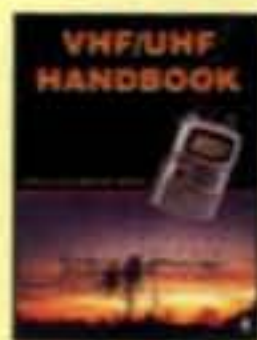
Order: RSPFXG **\$13.50**

## VHF/UHF Handbook

Edited by Dick Biddulph, M0CGN

RSGB, printed 2002., 317 pages.

One of the most complete guides on the theory and practice of reception and transmission on VHF/UHF band. Hundreds of illustrations and photos.



Order: RXVUH **\$35.00**



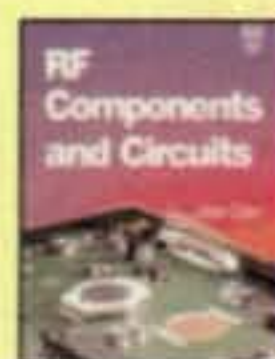
## Packet Radio Primer

By Dave Coomber, G8UYZ & Martin Croft, G8NZU

RSGB, 2nd Ed., 1995, 266 pages

Detailed practical advice for beginners. Completely revised and greatly expanded to cover developments in this field and beyond bare basics into advanced areas such as satellite operations.

Order: RSPRP **\$16.00**



## RF Components & Circuits

By Joe Carr, G3YWX

RSGB, 2002 Ed, 416 pages.

A complete self-study course in RF technology, with concise reference text to dip into in a readable and straightforward format.

Order: RSRFCC **\$36.25**

Shipping & Handling: U.S. & Possessions-add \$5 for the first item, \$2.50 for the second and \$1 for each additional item. FREE shipping on orders over \$75. Foreign-calculated by order weight and destination and added to your credit card charge. Magazine prices include shipping and handling charges.

# magazines at holiday sale prices!

## CQ Amateur Radio

CQ's editorial content is aimed squarely at the *active* ham. Within each issue, CQ's features and columns cover the broad and varied landscape of the amateur radio hobby from contesting and DXing to satellites and the latest digital modes. CQ includes equipment reviews, projects, articles on the science as well as the art of radio communication and much, much more.

**Domestic Rates:** 1-year ~~\$31.95~~; 2 yrs ~~\$57.95~~; 3 yrs ~~\$83.95~~

**Holiday Special!** \$29.95 \$53.95 \$77.95

**Canada/Mexico:** 1-year ~~\$44.95~~; 2 yrs ~~\$83.95~~; 3 yrs ~~\$122.95~~

**Holiday Special!** \$42.95 \$79.95 \$116.95

**Foreign:** 1-year ~~\$58.95~~; 2 yrs ~~\$107.95~~; 3 yrs ~~\$158.95~~

**Holiday Special!** \$54.95 \$103.95 \$152.95



## Popular Communications

The world's most authoritative monthly magazine for shortwave listening and scanner monitoring. Editorial content consists of features on scanner monitoring of police; fire, utility and aircraft communications; international shortwave listening; CB radio; amateur radio; FRS; GMRS; monitoring radio digital communications, including CW, RTTY, SITOR, etc; AM/FM commercial broadcasting; weather and communications satellites; telephone equipment and accessories; radio nostalgia; alternative radio; clandestine radio; and military radio.

**Domestic Rates:** 1-year ~~\$28.95~~; 2 yrs ~~\$51.95~~; 3 yrs ~~\$74.95~~

**Holiday Special!** \$26.95 \$47.95 \$68.95

**Canada/Mexico:** 1-year ~~\$38.95~~; 2 yrs ~~\$71.95~~; 3 yrs ~~\$104.95~~

**Holiday Special!** \$36.95 \$67.95 \$98.95

**Foreign:** 1-year ~~\$48.95~~; 2 yrs ~~\$91.95~~; 3 yrs ~~\$134.95~~

**Holiday Special!** \$46.95 \$87.95 \$128.95



## CQ VHF

The all-time favorite magazine for the VHF/UHF enthusiast is better than ever. This quarterly magazine's editorial content focuses on Ham radio above 50 MHz. Regular columns include: Antennas, OpEd, Satellites, VHF Propagation, & FM.

**Domestic Rates:** 1-year ~~\$25.00~~; 2 years ~~\$50.00~~; 3 years ~~\$75.00~~

**Holiday Special!** \$23.00 \$46.00 \$69.00

**Canada/Mexico:** 1-year ~~\$35.00~~; 2 years ~~\$70.00~~; 3 years ~~\$105.00~~

**Holiday Special!** \$33.00 \$66.00 \$99.00

**Foreign:** 1-year ~~\$36.00~~; 2 years ~~\$72.00~~; 3 years ~~\$114.00~~

**Holiday Special!** \$36.00 \$72.00 \$108.00



Call 1-800-853-9797 or FAX your orders to 516-681-2926  
You can also order on our web site: [www.cq-amateur-radio.com](http://www.cq-amateur-radio.com)

Alinco delivers more operating fun for less.

# Dual Band Dynamos for your pocket or your car!

## DR-635T 2M/440MHZ Mobile/Base Transceiver

### Dual Band Transceiver with Full Duplex Capability

Alinco's new DR-635T is an easy-to-use, high-quality transceiver for simplex and repeater operations on the VHF and UHF bands. With cross-band repeat, full duplex capability and a remote mountable control head, the DR-635T features newly designed RF circuitry that delivers increased resistance to interference from adjacent signals. Plus, a new protection circuit automatically lowers the power setting whenever the internal temperature rises. This protects the radio when used as a cross-band repeater. But, that's just the beginning:



- Large, 6 character alphanumeric display with freely and separately selectable three color display illumination in blue, violet or orange for TX/RX/stand-by
- TCXO that is stable to  $\pm 2.5$  ppm
- Narrow FM mode
- Power supply voltage display
- Ignition key on/off feature & theft alarm feature
- CTCSS, DCS encode/decode and DTMF encode functions plus European Tone Bursts
- Multiple scan modes and extended receive capabilities including broadcast FM
- Backlit DTMF microphone allows direct frequency entry and more
- VHF: 50/20/5, UHF: 35/20/5 watt power output settings
- 200 Memory channels that can operate in splits of 80ch/VHF, 80ch/UHF and 40ch freely programmable with 1 call channel each for VHF and UHF operation
- Extended receive from 108.000 ~ 173.995MHz / 335.000 ~ 479.995MHz / 87.5 ~ 107.995MHz, transmits from 144.000 ~ 147.995MHz / 430.000 ~ 449.995MHz, plus reception on AM aircraft band and the ability to operate on MARS frequencies
- Can also operate with Alinco's optional EJ-50U digital data packet board that fits inside or the EJ-47U digital voice board

## DJ-C7T 2M/440MHZ "Pocket-size" HT

Hams are packing some serious radio power in their pockets with the DJ-C7T, the new dual band mini HT. Alinco led the way in breakthrough miniature electronics technology with its revolutionary "credit card" size transceivers. Now, the DJ-C7T offers a "pocket size" HT that's small in size but BIG in added memories and modes.

### Check out the features of this "new generation" DJ-C7T

- Internal speaker with great audio!
- 200 Memories
- VFO, Memory and Scan modes
- 39 CTCSS tone squelch (encode+decode) settings
- Split function
- SMA antenna port
- As thin as 0.57in. and just 3.59 oz. total weight with antenna and battery
- Cloning feature
- Lithium-ion battery
- Wide-band receive; includes FM broadcast and AM aircraft bands
- Auto repeater setting

*The DJ-C7T can fit in a pocket or purse, but it's a versatile dual band HT with an enhanced receiver. So, you can enjoy twice the operating fun in half the size.*

Thanks to Alinco, you can have a dual band dynamo in your pocket AND in your car!



WWW.**ALINCO**.com

Distributed in North America by Ham Distributors, 1775 North Loop 336 East, Ste. 8, Conroe, Texas 77301 • Phone: 936-649-1497 • Fax: 936-649-1303 • email: USrep@Hamdistributors.com

Check regulations before operating in crossband mode. Products intended for properly licensed operators. Permits required for MARS use. CAP use subject to equipment approval. Specifications subject to change without notice or obligation. Performance specifications only apply to amateur bands. NOTICE: Effective 5/1/2004, ALL warranty claims and requests for repair/technical assistance for Alinco products should be sent to Ham Distributors regardless of contact information found on the warranty certificate packed with the product.

## Eras of the Golden Age

**P**rior to 1930, the manufacture of American amateur radio equipment as a viable industry did not exist. The few manufacturers around in the 20th century's early decades divided their business among commercial, military, and hobby interests. Radio hobbyists were not necessarily licensed amateurs either. Many who experimented with the technology of the day were interested in the art of radio and were content just to listen rather than transmit. This intensified with the growth of commercial broadcasting in the 1920s.

Ham radio was about experimentation in those days, too, striving always to communicate farther and better. DX had a much different meaning then, and a transcontinental contact was a thrilling experience, even if it took a series of relaying stations to accomplish it.

The decade of the 1920s closed with events having serious implications for amateur radio. After complaints by military and commercial services regarding interference from out-of-band amateur operation, the U.S. government issued stringent new regulations for the hobby. Amateur radio had the choice of either meeting the new standards, which took effect in January of 1929, or surrendering its privileges and frequency allocations.

Amateur radio's organizational body, The American Radio Relay League, took note of the new proposals in early 1928 and made every effort to prepare amateurs for the changed regulations. Its president, Hiram Percy Maxim, declared frequency precision to be the outstanding problem facing the hobby. The League appointed Ross Hull, an Australian renaissance man, as the asso-

ciate technical editor of *QST*, its monthly magazine. A series of articles, by Hull and others, encouraging amateurs to improve their equipment and operating practices followed. Driven by the persuasion of the League and the regulatory stick of the government, amateur radio operators began to make the required changes.

The number of licensed amateurs continued to grow, and as the 1920s neared an end, was sufficient to create a viable, though tiny, market for commercial manufacturers. A few companies began selling ham gear before the end of the decade. In late 1928, Radio Electronics Laboratories (the predecessor of Eldico) advertised equipment designed to comply with increasingly strict regulations. R.E.L. sold its products in kit form, but they could be purchased factory-wired as well. Two other companies offering kits were Chicago's Allied Radio and Silver-Marshall. Stores selling every imaginable kind of electrical and radio part gave birth to New York City's Radio Row. James Millen joined the National Company as general manager and chief engineer in 1928. That same year, the Malden, Massachusetts company introduced its SW-2, the first of National's SW series of regenerative shortwave receivers.

As a new decade opened, more commercially made gear appeared on the amateur market, joining those products made by the few companies already in the business.

The five decades between 1930 and 1980 were the Golden Age of the American ham gear industry. During this period, more than 500 companies brought at least one product to market, and some produced dozens. The equipment evolved over time with changing technology, the emergence of new modes, and regulatory changes such as addition and deletion of license classes or modification of their privileges.

I have divided the half-century of this Golden Age into eight eras. History defines some eras, while technology, operating fads, and government regulation define others. The eras are not solely chronological, and there is overlap among them. For example, the post-war VHF era is concurrent with both the AM and early SSB eras. Solid-state technology developed at the same time repeater operation rose in popularity. Era 8 closes with the end of American-made equipment's dominance of the ham market. Other eras follow those presented here, and an optimistic long view of our hobby leaves others still to come. If we look back on previous eras with nostalgic fondness, we can also await those yet to come with anticipation and excitement.

\*208 Alpine Circle, Vestavia Hills, AL 35216  
e-mail: <k9oco@jveras.com>  
website: <www.k9oco.com>



*Introduced in 1935, National's HRO ranks as the signature receiver from Era One. Its continued evolution spanned three decades. (Photos © Joe Veras, 2006, all rights reserved)*

### Era One – The Birth of the Industry

The early 1930s was not the best period in which to begin a new business. With the nation's economy still caught in the stranglehold of the Great

# HamTestOnline™

The software that knows you™

Web-based training for the Amateur Radio written exams

**The fastest and easiest way to prepare for the exams**

- Presents concepts in logical order.
- Tracks your progress for each question.
- Uses *intelligent repetition* to focus on your weak areas.
- Includes the actual test questions, plus additional information.
- Random practice exams to simulate the real tests.
- Focus exams for:
  - Your unseen questions.
  - Your weak areas.
  - The most-often-missed questions.
  - The most-often-asked questions.
- Includes all three U.S. and both Canadian written exams.



**When you have the right tools everything is easier**

[www.hamtestonline.com](http://www.hamtestonline.com)

Depression, even established firms gasped for air, struggling to survive. The American amateur radio equipment industry was born into those troubled times.

A few far-sighted companies, surveying the bleak economic terrain, discovered not despair, but opportunity. East Coast firms such as National and Hammarlund, already engaged in other manufacturing enterprises, marketed their first amateur radio products. In Chicago, Bill Halligan began producing communications receivers under the Hallicrafters name. Farther west, in Cedar Rapids, Iowa, Art Collins built amateur transmitters in his basement. During the next 40 years, each of these companies became hamshack, if not household, names. They produced significant amateur product lines and made notable contributions to the state of the art. However, by the 50-year mark each of them had withdrawn from the amateur market or disappeared entirely.

## Era Two – WW II and Surplus

When the Federal Communications Commission issued Order Number Eighty-Seven on 9 December 1941, U.S. ham operation ceased entirely as America entered World War II. The



*The ARC-5/SCR-274N Command sets made a tremendous contribution to airborne communication in WW II and were widely used by amateurs in the post-war years.*

number of amateurs tripled between 1930 and the onset of the war, the ranks swelling from about 17,000 licensees to more than 50,000. More than half of these licensees did wartime duty. Some served in uniform in the armed services,



## ComTek Systems



PVS-2 for 2 el. Vertical Specify band  
Offers selectable end fire or broadside directions  
STACK - 2 for tribanders 80-10  
SYS-3 STACK YAGI SWITCH  
RCAS-8 REMOTE ANTENNA SWITCH  
VFA-4 Set of 4 vertical feedpoint assemblies  
RR-4 Aluminum 60 hole Radial Rings

### COMTEK THE 4-SQUARE EXPERTS

ACB-160	ACB-80
ACB-40	ACB-20
ACB-15	ACB-10

**CALL FOR PRICES**

## ComTek Systems

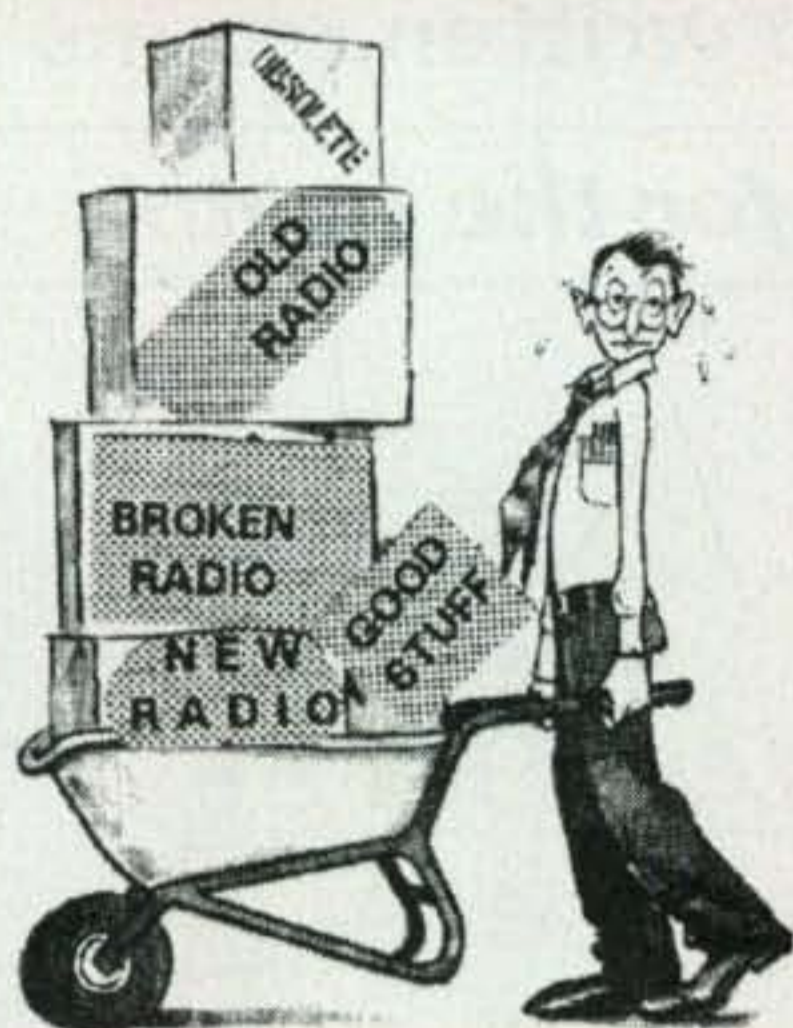
P.O. Box 470565, Charlotte, NC 28247

Tel: (704) 542-4808 FAX (704) 542-9652

e-mail - [info@comteksystems.com](mailto:info@comteksystems.com)

Web: <http://www.comteksystems.com>

## NEED SOME HELP WITH THAT



## DONATE YOUR RADIO

Turn your excess Ham Radios and related items into a tax break for you and learning tool for kids.

Donate your radio or related gear to an IRS approved 501 (c)(3) charity. Get the tax credit and help a worthy cause.

Equipment picked up anywhere or shipping arranged. Radios you can write off - kids you can't.

Call (516) 674-4072  
FAX (516) 674-9600  
e-mail: crew@wb2jkj.org  
www.wb2jkj.org



THE RADIO CLUB OF  
JUNIOR HIGH SCHOOL 22  
P.O. Box 1052  
New York, NY 10002  
*Bringing Communication to  
Education Since 1980*

while others were civilian radio operators at military bases or members of Civilian Defense. A number of amateurs participated in the War Emergency Radio Service (WERS), operating with low-power portable equipment on the 2<sup>1</sup>/<sub>2</sub>-meter band.

Companies manufacturing commercial and ham communications gear shifted to military equipment, stepping up production to meet the wartime demand. Before the United States' entry into the conflict, many of these companies worked to supply equipment to our future allies as war raged in Europe.

The war's end brought with it tons of electronic surplus. Much of it found a home in amateur stations, either as equipment or parts for construction projects. Technology developed for the military during the war made its mark on post-war ham radio. New tube designs made possible more compact, higher performance gear. Wartime research on radar and VHF/UHF communication yielded benefits at the upper end of the amateur spectrum. The SO-239 connector became commonplace on transmitters and receivers, as did the use of coaxial cable for the antenna feedline.

### Era Three – The AM Era

Prior to World War II, amateur radio frequently moved in lockstep with technology. Then, while technology marched off to war, amateur operation was confined in a state of suspension. When peacetime breathed life back into the hobby, most hams returned to the air with equipment from the previous decade.

Even the new offerings from those companies that survived the war years were largely throwbacks to the late 1930s and early '40s. Collins, not surprisingly, was a leader in applying

wartime innovation to its post-war ham gear, but for another year or two many manufacturers sold products that were extensions of their pre-war designs.

This era can be characterized as one in which amplitude-modulated radio-telephony reigned supreme. Big iron was the guiding principle in both transmitters and receivers. Nearly every transmitter manufacturer featured, at the top of its product line, a rig large and heavy enough to render lifting by one man difficult or impossible.

The middle and late 1940s found amateur radio concerned with more than just AM operation, though. For a few years after wartime restrictions ended, the ARRL encouraged the use of narrow-band frequency modulation in portions of the HF spectrum. A number of manufacturers made equipment that included NBFM, but it proved to be an idea whose time had not yet arrived.

### Era Four – Single Sideband

Amateur radio was a late-arriving player in the single-sideband game. The mathematical concept for single-sideband, suppressed-carrier transmission was developed in 1914. A year later, Bell Laboratories' John R. Carson filed a patent application for an SSBSC circuit, a patent he was not granted until 1923. By that time, long-distance and transatlantic telephone service was making use of the narrow SSBSC signals to route more simultaneous calls on a given cable circuit. Robert Moore, W6DEI, began experimenting with single-sideband on the amateur bands, publishing a series of articles in *R9 Magazine* in 1933–34.

The American Radio Relay League tossed its hat into the sideband ring with an October 1935 *QST* article by Tech-



Heavyweight transmitters such as the Supreme AF-100 ruled the AM phone airwaves in the immediate post-war years.

nical Editor James Lamb. His explanation of the transmission and reception of SSBSC was presented from a non-mathematical perspective. Pressure to adopt the mode was not sufficient to overcome the technical difficulties involved, and amateur single-sideband experimentation lay dormant until after World War II.

In the fall of 1947, Stanford University Radio Club station W6YX went on the air using a single-sideband transmitter designed by O. G. Villiard, W6QYT. The experiments were reported in *QST* early in 1948. A series of articles and editorials promoting sideband appeared in the following months. For amateur radio, single-sideband was an idea whose time had come. The mode's main selling point was its efficient bandwidth compared to conventional AM phone, but early adherents soon came to appreciate SSB's apparent superiority in busting through QRM and QRN.

### Era Five – VHF

Post-war VHF operation took shape along different lines than that of the 1930s. In the earlier decade, even 10 meters had been considered VHF. Most amateur operation used simple super-regenerative receivers and modulated-oscillator transmitters. During the war, some participants in WERS used similar equipment on the 112-MHz band, although government regulations imposed stricter frequency accuracy and stability standards than were customary 1930s' amateur practice.

VHF, UHF, and microwave technology took great strides forward during the war. Amateurs incorporated many of these improvements when they returned to the air at war's end. The changes encompassed more than just equipment and technical matters. The old 2<sup>1</sup>/<sub>2</sub>-meter (112 MHz) and 5-meter (56 MHz) bands were gone, replaced by new frequencies at 144–148 MHz (2 meters) and 50–54 MHz (6 meters).

Some post-war equipment included 6 meters as an extension of its HF coverage. RME made a tunable VHF converter for its RME-45 receiver. Companies such as Lafayette and Columbus Electronics offered similar converters. In July 1951, the FCC instituted the Novice Class license, granting with it privileges for voice operation on 145–147 MHz. The Technician Class license, introduced at the same time, carried all amateur privileges on frequencies above 220 MHz. Holders of these new licenses expanded the potential market for manufacturers of VHF ham gear.

## Hear what others have to say

Listen clearly on SSB, UHF, VHF, HF and FM

**Hear-It Speaker (NES10-2)**  
"virtually total elimination of annoying hiss without annoying distortion of the processed audio. What more can you ask of a DSP speaker?" *MT May 2003*

**Hear-It In-line module (NEIM1031)** Optional stand  
"level 4 provided remarkable noise suppression, without making the SSB sound hollow and brassy" *CQ Jan 2005*

## Have a noise free holiday

**Hear-it DSP module (NEDSP1061)**  
The GAP HEAR IT Amplified Noise Eliminating Module is easy to set up and its functions are microprocessor controlled, enabling simple operation via two pushbuttons, power on/off audio bypass and DSP filter on/off.

**Hear-it Amplified DSP module (NEDSP1062)**  
"the on air performance in improving readability of weak SSB signals or those in noisy conditions were excellent" *RadCom July 2005*

Contact GAP for your nearest dealer

bhi Ltd. P.O.Box 136  
Bexhill on Sea, East Sussex, TN39 3WD, UK  
Tel: 0870 240 7258 Fax: 0870 240 7259  
www.bhi-ltd.co.uk sales@bhi-ltd.co.uk

GAP Antenna Products Inc.  
99 North Willow Street, Fellsmere, FL 32948  
Tel: (772) 571 9922 Fax: (772) 571 9988  
email: contact@gapantenna.com www.gapantenna.com

# SEASON'S GREATINGS

ALPHA RADIO PRODUCTS

6185 Arapahoe Rd.  
Boulder, CO 80303

303-473-9282  
www.alpharadioproducts.com

A CQ Advertiser Since 1947 AMERICAN MADE

# VIBROPLEX®

100th ANNIVERSARY ORIGINAL

VIBROKEYER GOLD

DOUBLE KEY DELUXE

**NEW!! Flat Arm Vari-Speed for Lightning Bug and Champion \$29.95**

**\*\*CHRISTMAS SALE\*\***

Carrying cases for Code Warrior Jr/Chrome Warrior now \$29.95

Our large selection of "seconds" keys (minor blemishes) and Vibroplex logo items make economical "stocking stuffers"!!

The Vibroplex Company, Inc., 11 Midtown Park, E., Mobile, AL 36606  
1-800-840-8873 FAX 1-251-476-0465 email: vibroplex@vibroplex.com

Mastercard, Visa and Amex accepted • Dealers wanted outside the US. email or FAX

See all of our products at [www.vibroplex.com](http://www.vibroplex.com)

The modest antenna requirements for VHF operation made it attractive for both mobile and portable work. Gonset sold converters and its VHF station-in-a-box, the Communicator.

### Era Six – Transceivers

The idea may have occurred earlier to someone, but the growth of single-sideband made the transceiver concept both practical and appealing. In its most basic form, a transceiver uses the same oscillators to control the frequency of both transmitter and receiver. In most applications, other circuits are shared as well.

The transceiver makes mobile operation easier, too. One piece of equipment replaces the separate transmitter and receiver or converter. Frequency is controlled with one knob, and the number of other knobs and switches often decreases as well.

Collins Radio brought the transceiver to the commercial market with the introduction of the KWM-1 in 1957. The Collins transceiver was born out of a workshop tinkering session by Gene Senti, WØROW, a company engineer. It went on to set the stage not only for Collins products, but for other manufacturers as well. Collins and the R. L. Drake company continued to manufacture separate receivers and transmitters for another 20 years, but even these were designed to transceive when hooked together with the proper cables.

Almost every company making HF equipment added a transceiver to its lineup in the 1960s. Except for low-power and basic equipment, few separate transmitters and receivers could be found by the mid-'70s.

### Era Seven – Solid State

Until 1947, communications technology closely tracked the evolution of the vac-

*(Upper right) Central Electronics was a significant manufacturer of amateur sideband equipment in the early '50s. The company's most elaborate transmitter, the 200-V, appeared in 1961.*

*(Middle photo) Amateur VHF equipment of the 1950s and '60s bridged the gap between the uncomplicated pre-war gear and the state of the art achieved in later decades. Clegg's 175-watt Zeus transmitter worked AM and CW on the 6- and 2-meter bands.*

*(Lower right) Collins announced the KWM-1 transceiver in 1956 and delivered it in '57, signaling the beginning of the end for separate transmitter/receiver combinations in amateur stations.*







The first transistor amateur product, the Regency ATC-1 converter, debuted in 1956. Transistorized accessories and QRP rigs followed, and by the early 1970s solid-state HF transceivers such as Ten-Tec's Triton appeared.

uum tube. In December of that year, Bell Laboratories announced something called the *transistor*. Two-port solid-state devices had been used in the WW II era, but the little three-legged transistor opened wider vistas than anyone could ever have imagined.

Its inventors—John Bardeen, Walter Brattain, and William Shockley—were awarded the Nobel Prize in 1956. The first transistor radio, the Regency TR-1, appeared in October 1954. It was a broadcast-band set using four Texas Instruments transistors. T.I. did the design work but farmed it out to Regency for production.

A number of small construction projects using the transistor were published in amateur radio literature in 1952 and '53. Regency introduced the first commercial transistorized ham product in 1956. The ATC-1 converter covered 80 through 10 meters. Hallicrafters announced the FPM-200 in 1957, but the elaborate and expensive transceiver was not produced until 1961, and then only in limited numbers. The FPM-200 was all-transistor except for the driver, final amplifier, and voltage-regulator tubes. Several other companies used this hybrid arrangement in their HF transceivers through the 1960s.

In 1969, Ten-Tec made a series of solid-state modules that could be used to construct a low-power CW transmitter or direct-conversion receiver. The following year, the company combined the modules and sold them as Powermite transceivers. In 1971, Ten-Tec brought out its Argonaut, a 5-watt sideband and CW transceiver. A companion solid-state 50-watt amplifier followed in '72. The company launched a milestone product in 1973: The Triton

was a full-featured, all-solid-state SSB and CW HF transceiver offered in both 100- and 200-watt input models.

### Era Eight – FM and Repeaters

FM and repeaters changed amateur radio more than spark, CW, AM, or single sideband. VHF FM operation, both simplex and repeater, became ham radio's *Main Street*, cutting across



The Yaesu FT-857D is the world's smallest HF/VHF/UHF multimode amateur transceiver covering 160 m to 70 cm with 100W on HF. Now with 60 meters and DSP2 built-in.



The FT-897D is a multi-mode high-power base/mobile transceiver covering 160 m to 70 cm including 60 meters. Now with TCXO. Visit [www.universal-radio.com](http://www.universal-radio.com) for details!

**Universal Radio**  
6830 Americana Pkwy.  
Reynoldsburg, OH 43068  
♦ Orders: 800 431-3939  
♦ Info: 614 866-4267  
[www.universal-radio.com](http://www.universal-radio.com)

# ATOMIC TIME

1010 Jorie Blvd. #332  
Oak Brook, IL 60523  
1-800-985-8463  
[www.atomictime.com](http://www.atomictime.com)



ADWA101 - \$49.95

14" LaCrosse Black Wall  
WT-3143A \$26.95

This wall clock is great for an office, school, or home. It has a professional look, along with professional reliability. Features easy time zone buttons, just set the zone and go! Runs on 1 AA battery and has a safe plastic lens.

Digital Chronograph Watch  
ADWA101 \$49.95

Our feature packed Chrono-Alarm watch is now available for under \$50! It has date and time alarms, stopwatch backlight, UTC time, and much more!



WT-3143A - \$26.95



WS-8248 - \$64.95

LaCrosse Digital Alarm  
WS-8248U-A \$64.95

This deluxe wall/desk clock features 4" tall easy to read digits. It also shows temperature, humidity, moon phase, month, day, and date. Also included is a remote thermometer for reading the outside temperature on the main unit. approx. 12" x 12" x 1.5"

1-800-985-8463  
[www.atomictime.com](http://www.atomictime.com)  
Quantity discounts available!



WS-9412U - \$19.95

LaCrosse WS-9412U Clock \$19.95  
This digital wall / desk clock is great for travel or to fit in a small space. Shows indoor temp, day, and date along with 12/24 hr time. apx 6"x 6"x 1"

Tell time by the U.S. Atomic Clock -The official U.S. time that governs ship movements, radio stations, space flights, and war-planes. With small radio receivers hidden inside our timepieces, they automatically synchronize to the U.S. Atomic Clock (which measures each second of time as 9,192,631,770 vibrations of a cesium 133 atom in a vacuum) and give time which is accurate to approx. 1 second every million years. Our timepieces even account automatically for daylight saving time, leap years, and leap seconds. \$7.95 Shipping & Handling via UPS. (Rush available at additional cost) Call M-F 9-5 CST for our free catalog.

**NEW!** \$29.95  
On CD-ROM  
2,349.95 all 3,599.95

**Paperless Study Cards**  
elements 2 - 3 - 4

You Don't Have to BE a Rocket Scientist...  
to STUDY like ONE!

Paper or Paperless . . .

Use our "QUICK & SIMPLE" flash cards  
for all your amateur radio exams.

**VIS Study Guides**  
P.O. Box 284, Coffeeville, AL 36524-0284  
1-800-655-4267 - www.visradio.com

**POWERPORT RADIO GEAR HARNESS**

Bandolier-style harness has 2 radio pockets, 3 accessory pockets for flashlight, pens, GPS, etc., and full map pocket, along with many attachment points for effective hands-free operation.

\$36.95

800-206-0115 www.powerportstore.com



www.surplussales.com  
**Surplus Sales of Nebraska**

Split Beads for Radio Frequency Interference

Ferrite Split Beads are the best form of field applied prevention for RFI and EMI noise suppression available. All made with 43 material. Available in 3 sizes.

- 1/4" Bead with cage \$3.25 ea \$3.00 (6+)
- 3/8" Bead with cage \$2.95 ea \$2.75 (6+)
- 1/2" Bead with cage \$6.95 ea \$6.50 (6+)

**MINI-CIRCUITS®**

Surplus Sales has a bigger selection of Mini-Circuits than anyone else in the country. Visit our website for all of your Mini-Circuit needs. Amplifiers, Attenuators, Directional Couplers, Limiters & more!

1218 Nicholas Street, Omaha, NE 68102  
e-mail: grinnell@surplussales.com  
800-244-4567 • 402-346-4750

**WWW.KU4AB.COM**

- Horizontal Omni antennas
- Diversity Polarization antennas
- Dual Band Horizontal Omnis
- Stacked Horizontal Omni Sets
- Found in all 50 States & Canada



**SOLID ROD Construction Ratings**  
50 OHM 1000WATT 100MPH

**Phil Brazzell KU4AB**  
339 Venice Cove, Collerville, Tn. 38017  
phone 901-270-8049



Repeater operation dramatically changed the ham radio landscape, ushering in a new personal and portable style of communication. American-made products, such as the Regency HR-2A (1972), were soon overwhelmed by VHF/UHF equipment from Asia.

almost every facet of the hobby in the process.

The FM movement began in the early 1960s when the Federal Communications Commission mandated changes in the technology used by commercial mobile radio services. The explosive growth of these services soon used up all the allotted spectrum, and more channels were needed to accommodate new customers. The FCC decided to squeeze additional channels into the same space by decreasing the bandwidth of the signals. The mobile services were forced to abandon their wide-band FM gear in favor of narrow-band equipment, and thousands of surplus wide-band transmitters and receivers became available to hams at a fraction of their value.

Enterprising hams converted the equipment from the business bands to nearby amateur frequencies. Repeaters gave the FM sets great range and flexibility, particularly for mobile-to-mobile communication. The initial popularity of FM and repeaters was most apparent in California and densely populated areas of the East Coast. California had so many repeaters by the mid-1960s that W6 hams saw the wisdom of, and need for, a frequency-coordinating body.

The often bulky surplus commercial equipment eventually gave way to dedicated ham gear. By the late 1970s, most of the American-made base-station, mobile, and hand-held gear had been supplanted by products from Asia.

A few notable U.S. companies soldiered on in the decades following 1980, making HF and UHF/VHF gear and accessories. For most, though, it was game over.

### In Closing

Thanks to KB4IRB, N4CH, W1EC, and WA5UEK for providing the equipment photographed for this article. Thanks also to those who have written to me regarding previous columns. I try to respond directly to each e-mail, card, or letter, but would like to offer my appreciation publicly as well. Your kind words are a great gift to me.

In the spirit of the season, Merry Christmas from my ham shack to you and your families. I wish you peace, prosperity, and good propagation in 2007! Speaking of the new year, be sure to enter it with a new Radio Classics calendar hanging on the wall (see the ad on page 71).

I close this column with a sad Radio Classics Calendar postscript. Jim Jorgensen, K9RJ, who owned a couple of pieces of gear featured in the 2007/8 calendar, passed away late this summer. Jim was not only a dedicated collector, but an accomplished DXer and skilled operator as well. He was a good friend and a regular calendar contributor over the years. He was a thoroughly decent man, both inside and outside our hobby. I will miss him.

73, Joe, K9OCO

# DXpeditions into the New Year

BY CARL SMITH, N4AA

dx

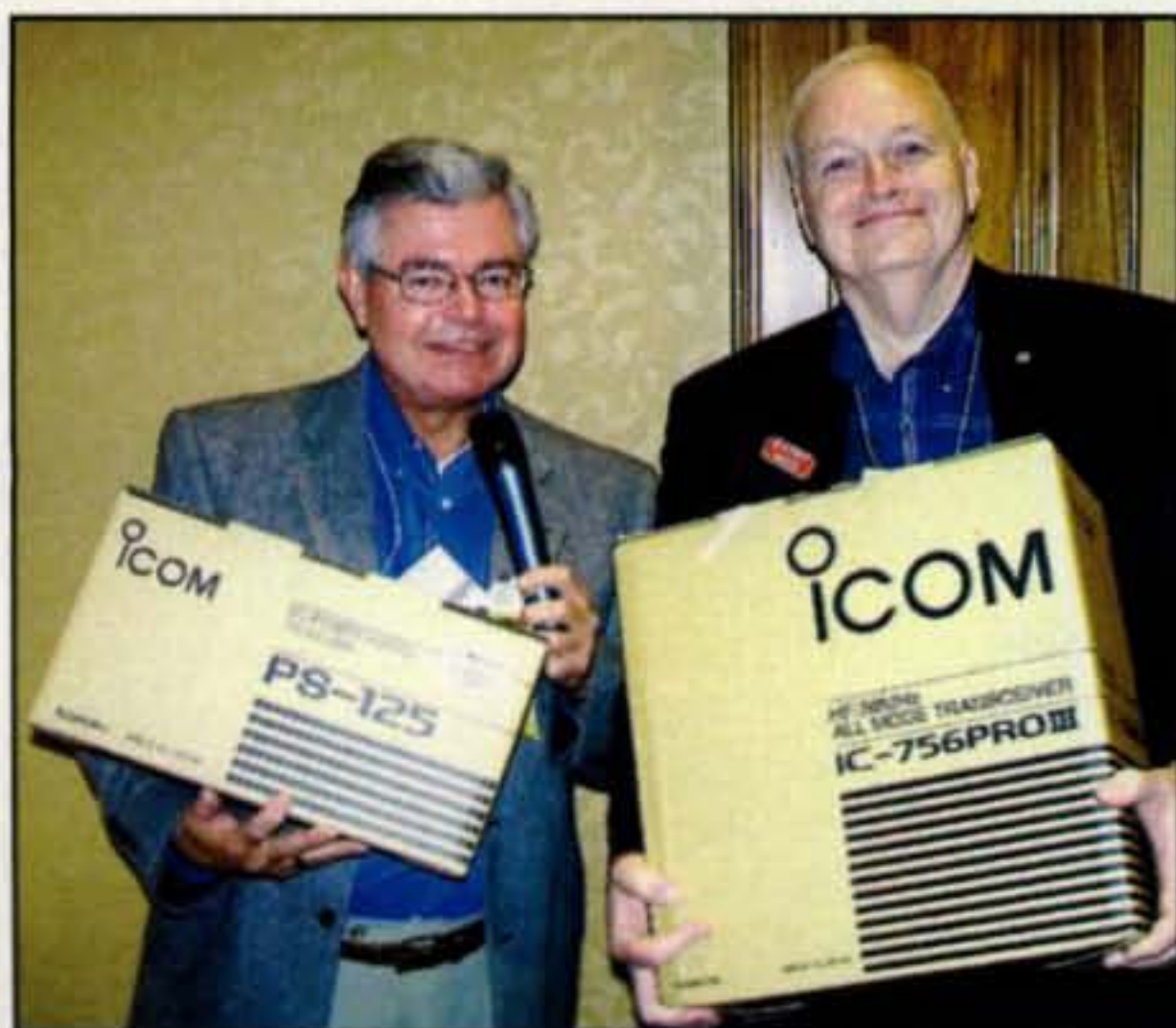
September was a busy month for me. There was the W9DXCC Convention in Chicago and just two weeks later the SEDCO II 2006 convention in Tennessee. As I write this in early October, hopefully I can relax a bit now and get it together for the contest season!

W9DXCC is always a great event, and as usual I was able to sponsor the Friday evening Welcome Reception. The room was packed for most of the evening with many big-gun W9's and their friends.

Saturday was filled with an excellent program capped with the usual dinner banquet. Good food was enjoyed by all, and then we were treated to a super wrap-up of the 3YØX DXpedition by Bob Allphin, K4UEE. A special DVD of the 3YØX experience was expected to be available in November. Check the 3YØX website for ordering information. The annual raffle for an IC-7000 to benefit the Northern California DX Foundation was a resounding success.

Then we had the SEDCO II 2006 gathering in Pigeon Forge, Tennessee on September 30th. This was only the second SEDCO event, but it brought together a great group of contesters and DXers for a day of fun and fellowship. Presentations by Dave, K4SV; Rick, NQ4I; Ned, K1GU, and Jeff, K4JNY; Joe, W8GEX; Joe, AA4NN; and Bob, K4UEE, made the day well worth the trip for over 125 folks. I was again honored to participate as the emcee

\*P.O. Box DX, Leicester, NC 28748-0249  
e-mail: <n4aa@cq-amateur-radio.com>



Now here is one happy ham! David Bower, K4PZT (right), won a raffle prize at the SEDCO Convention in September. Sam Brown, WA4IUM (left), the prize drawing emcee, holds the matching power supply. The ICOM 756PROIII was donated by ICOM America and the proceeds will go to DX foundations and DXpeditions. (Photo courtesy of David, K4PZT, SEDCO "official photographer")

### CQ DX Awards Program

#### SSB

2488 .....HSØ/EA4BKA

#### SSB Endorsements

330 .....K6YRA/337	330 .....OZ5EV/336
330 .....K5TVC/337	310 .....WØROB/311
330 .....K5OVC/336	275 .....HSØ/EA4BKA/276
330 .....DJ9ZB/336	

#### CW Endorsements

330 .....NØFW/334	320 .....KA3S/328
330 .....KA7T/333	200 .....KD2GC/202

#### RTTY Endorsements

320 .....OK1MP/322

The basic award fee for subscribers to CQ is \$6. For non-subscribers, it is \$12. In order to qualify for the reduced subscriber rate, please enclose your latest CQ mailing label with your application. Endorsement stickers are \$1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Currently we recognize 337 active countries. Please make all checks payable to the award manager.

for the DX portion of the program. During the evening break we were treated to an outstanding buffet dinner provided by Damon's, followed by the drawing for a large number of prizes.

We were honored to have real DX attend this year—John, G3LZQ, a couple of KP4's—and some attendees traveled long distances from Illinois, Mississippi, Oklahoma, Pennsylvania, etc. We also had a raffle to benefit DX foundations. ICOM honored us with an IC-756PROIII, which was won by David Bower, K4PZT (see photo).

Lynn, W4NL, together with his wife Rosie, KA4S, and George, W4UWC, started SEDCO last



This is DXpeditioning the way we all would like it to be. TDXS members W5GCX, K5LBU, and K5UO operated the CQ WW DX SSB Contest from Granada, Nicaragua as YN2EJ. (Photo from the website: <<http://www.tdxs.net/YN2.html>>)

# THE QSL MAN®

Since 1979, Quality, Service, and Value!  
**Free samples**  
**Wayne Carroll, W4MPY**  
 P.O. Box 73  
 Monetta, SC 29105-0073  
 Phone or FAX (803) 685-7117  
 URL: <http://www.qslman.com>  
 Email: [w4mpy@qslman.com](mailto:w4mpy@qslman.com)

## "Specialist in RF Connectors and Coax"

Part No.	Description	Price
PL-259/USA	UHF Male Phenolic, USA made	\$1.50
PL-259/AGT	UHF Male Silver Teflon, Gold Pin	1.50 10/\$9.00
UG-21D/U	N Male RG-8, 213, 214 Delta	3.25
UG-21B/U	N Male for RG-8, 213, 214 Kings	5.00
9913/PIN	N Male Pin for 9913, 9086, 8214	
	Fits UG-21 D/U & UG-21 B/UN's	1.50
UG-21D/9913	N Male for RG-8 with 9913 Pin	4.00
UG-21B/9913	N Male for RG-8 with 9913 Pin	6.00
UG-146A/U	N Male to SO-239, Teflon USA	8.50
UG-83B/U	N Female to PL-259, Teflon USA	8.50

### The R.F. Connection

213 North Frederick Ave., #11 CQ  
 Gaithersburg, MD 20877 • (301) 840-5477

800-783-2666  
 FAX 301-869-3680  
[www.therfc.com](http://www.therfc.com)

Connecting you through the millennium!

Celebrating our 28th Year!

Complete Selection Of MIL-SPEC Coax, RF Connectors And Relays

## RADIO DAZE VINTAGE RADIO & ELECTRONICS

Your Source For:

VACUUM TUBES • Classic Transformers • Components  
 Glass Dials & Other Reproduction Items • Books  
 Workbench Supplies • Refinishing Products • Tools  
**Contact Us Today For Our Free Catalog!**

7620 Omnitech Place, Victor, New York USA 14564  
 Tel: 585-742-2020 • Fax: 800-456-6494  
 web: [www.radiodaze.com](http://www.radiodaze.com) • email: [info@radiodaze.com](mailto:info@radiodaze.com)

## Kanga US – QRP Products

**NEW!** MicroT2 SSB Kit (Dec QST)

**NEW!** KK7B microR2 rx (Oct QST)

**NEW!** W7ZOI Universal QRP TX MKII

**NEW!** CWTouchkeyer products

**NEW!** W6MMA Super Antennas

2 ele portable beam 6 – 20 m

portable dipole & verticals

DK9SQ Masts and Antennas

Charge Controllers, AmpKeyer

Liquid Tape and Plastidip

Tornet Engineering DDS VFO

### Kits

Spectrum Analyzer, Power Meter, QRP Kits  
 IQPro DDS VFO, ARRL Books, TiCK Keyers

3521 Spring Lake Dr. Findlay OH 45840

419-423-4604

[n8et@kangaus.com](mailto:n8et@kangaus.com) [www.kangaus.com](http://www.kangaus.com)

## Radio Setup Guides

Short Form Guides For:

Kenwood, Icom, Yaesu,  
 Elecraft and Ten-Tec Radios

Condensed step-by-step procedures  
 Simplify Setup and Operation

Available for most  
 recent model radios.

Color printed and  
 fully laminated.

Complete line of  
 Leather & Neoprene  
 Radio Gloves and  
 Pouches for HT's and  
 other radios.

### Nifty! Ham Accessories

1601 Donalor Drive • Escondido, CA 92027  
 (760) 781-5522 • [www.niftyaccessories.com](http://www.niftyaccessories.com)

## The WPX Program

### CW

3173 .....9A2VN 3175 .....HA5LQ  
 3174 .....N4GG 3176 .....F8CWW

### SSB

2959 .....W6AFA 2963 .....KY6J  
 2960 .....N4GG 2964 .....YB2VTO  
 2961 .....K4EZY 2965 .....DL6MRS  
 2962 .....SV1GYG

### MIXED

1970 .....KD2GC 1973 .....SV1DPI  
 1971 .....N4GG 1974 .....JH5GEN  
 1972 .....AA8P

**CW:** 350 9A2VN. 650 IK2SGV. 2250 IK3GER. 4100 N4NO.  
 5200 WA2HZR.

**SSB:** 700 W8HGH. 1150 AE9DX. 1700 W6AFA. 1800  
 DL8AAV. 3500 N4NO.

**Mixed:** 800 KD2GC. 2150 AA1KS. 2200 WZ4P. 2300  
 7K3QPL. 4650 N4NO.

**160 Meters:** N4GG, TA3J

**80 Meters:** N4GG, TA3J

**40 Meters:** N4GG, TA3J

**20 Meters:** N4GG, TA3J

**15 Meters:** N4GG, TA3J

**10 Meters:** N4GG, TA3J

**Asia:** N4GG, TA3J

**Africa:** N4GG

**Europe:** N4GG, TA3J, TA3YJ

**Oceania:** N4GG

**North America:** N4GG, TA3J

**South America:** N4GG

**Award of Excellence:** UA0FAI, N4GG

**160 Meter Bar:** N4GG

**Award of Excellence Holders:** N4MM, W4CRW, K5UR,  
 K2VV, VE3XN, DL1MDD, DJ7CX, DL3RK, WB4SIJ, DL7AA,  
 ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GO, W4BQY,  
 I0JX, WA1JMP, K0JN, W4VQ, KF2O, WB8CNL, W1JR,  
 F9RM, W5UR, CT1FL, WA4QMQ, W8ILC, VE7DP, K9BG,  
 W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ,  
 VE7IG, N2AC, W9NUF, N4NX, SM0DJZ, DK5AD, WD9IIC,  
 W3ARK, LA7JO, VK4SS, I8YRK, SM0AJU, N5TV, W6OUL,  
 WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT,  
 VK9NS, DE0DXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK,  
 SM6CST, VE1NG, I1JQJ, PY2DBU, H8ILC, KA5W, K3UA,  
 HA8UB, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH,

K2POA, N6JV, W2HG, ONL-4003, W5AWT, KB0G,  
 HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN,  
 YB0TK, K9QFR, 9A2NA, W4UW, NX0I, WB4RUA, I6DQE,  
 I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB,  
 ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, K7EM,  
 YU1AB, IK2ILH, DE0DAQ, I1WXY, LU1DOW, N1IR,  
 IK4GME, VE9RJ, WX3N, HB9AUT, KC6X, N6IBF, W5ODD,  
 I0RIZ, I2MQP, F6HMJ, HB9DDZ, W0ULU, K9XR, JA0SU,  
 I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW,  
 K0IFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP,  
 OE1EMN, W9IL, I7PXV, S53EO, DF7GK, S57J, EA5BM,  
 DL1EY, DJ1YH, KU0A, VE2UW, 9A9R, UA0FZ, DJ3JGW,  
 OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW,  
 S51U, W4MS, I2EAY, RA0FU, CT4NH, EA7TV, W9IAL,  
 LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A,  
 IZ5BAM, K4LQ, K0KG, DL6ATM, VE9FX, DL2CHN, W2OO,  
 AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED,  
 EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B,  
 DK0PM, SV1EOS.

**160 Meter Endorsements:** N4MM, W4CRW, K5UR, VE3XN,  
 DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, WB8CNL,  
 W1JR, W5UR, W8ILC, K9BG, W1CU, G4BUE, LU3YL/W4,  
 NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SM0DJZ, DK5AD,  
 W3ARK, LA7JO, SM0AJU, N5TV, W6OUL, N4KE, I2UIY,  
 I4EAT, VK9NS, DE0DXM, UR2QD, AB9O, FM5WD,  
 SM6CST, I1JQJ, PY2DBU, H8ILC, KA5W, K3UA, K7LJ,  
 SM3EVR, UP1BZZ, K2POF, IT9TQH, N6JV, ONL-4003,  
 W5AWT, KB0G, F6BVB, YU7SF, DF1SD, K7CU, I1POR,  
 YB0TK, K9QFR, W4UW, NX0I, WB4RUA, I1EEW, ZP5JCY,  
 KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME,  
 WX3N, W5ODD, I0RIZ, I2MQP, F6HMJ, HB9DDZ, K9XR,  
 JA0SU, I5ZJK, I2EOW, KS4S, KA1CLV, K0IFL, WT3W,  
 IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J,  
 DL1EY, DJ1YH, KU0A, VE2UW, UA0FZ, DJ3JGW, OE6CLE,  
 HB9BIN, N1KC, SM5DAC, S51U, UA0FU, CT4NH, EA7TV,  
 LY3BA, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM,  
 DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED,  
 EU1TT, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU,  
 K0DEQ, DK0PM, SV1EOS.

Complete rules and application forms may be obtained by  
 sending a business-size, self-addressed, stamped envelope  
 (foreign stations send extra postage if airmail desired) to "CQ  
 WPX Awards," P.O. Box 355, New Carlisle, OH 45344 USA.  
 Note: WPX will not accept prefixes/calls which have been con-  
 firmed by computer-generated electronic means.

\*Please Note: The price of the 160 meter bar for the Award  
 of Excellence is \$6.50.

year, and they have already begun  
 planning for next year.

## Current DXpeditions

**5A7A – Libya.** The 5A7A DXpedition  
 should be in full swing when you read  
 this. They will be active for the CQ WW  
 DX CW Contest the end of November,  
 so many should have a good chance of  
 putting this one in their logs.

**VU7 – Lakshadweep.** The NIAR  
 (National Institute of Amateur Radio)  
 first announced an operation for  
 January 2007. The ARSI (Amateur  
 Radio Society of India) announced it  
 would be active in December from  
 Lakshadweep. A few weeks later, NIAR  
 changed its plans and that operation is  
 now scheduled for December 1–10.  
 Three separate teams with NIAR have  
 been "assigned" to three different  
 islands separated by 25 to 60 km. The  
 website <[www.vu7.in](http://www.vu7.in)> is the only offi-  
 cial source of information on the NIAR  
 operation. You will find a great deal of  
 information on the islands, the teams,  
 and other valuable material on that web-  
 site. Three QSL managers have been

appointed, thus allowing a better flow in  
 responding to the expected thousands  
 of requests for cards. VU7 has been at  
 or near the top of *The DX Magazine's*  
 Most Wanted survey for a very long  
 time. This operation, like the one to VU4  
 earlier this year, will surely take care of  
 the demand for VU7 for quite a while.

**9Q – Democratic Republic of the  
 Congo.** After a very long time, licenses  
 to operate were finally issued in late  
 September. SM5DIC/9Q1D; F5TLB/  
 9Q1TB, and VE2EK/9Q1EK were active  
 almost immediately. Their operations  
 were approved for DXCC credit effective  
 September 22, 2006.

**FR/G – Glorioso.** The latest word is  
 that this DXpedition has been further  
 delayed. It seems control of that island  
 has been transferred to another French  
 government agency. It is not known  
 when an operation from Glorioso may  
 happen.

**XF4DL – Revillagigedo.** This oper-  
 ation will be over as you read this, hav-  
 ing been scheduled for October 17  
 through November 3.

**ZL8R – Kermadec.** The MicroLite  
 Penguins group popped up October 10

## The CQ DX Field Award Program

### Mixed

78.....OK2AR 79.....W1CU

### SSB

46.....KT2C 47.....W1CU

### CW

48.....KT2C 49.....W1CU

### RTTY

9.....W1CU

## Endorsements

### Mixed

200.....HA0ODU/228 100.....PY2DBU/133

### SSB

175.....VE7SMP/190 100.....KT2C/100  
100.....PY2DBU/123

### CW

100.....KT2C/110

The basic award fee for subscribers to CQ is \$6. For non-subscribers, it is \$12. In order to qualify for the reduced subscriber rate, please enclose your latest CQ mailing label with your application. Endorsement stickers are \$1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Please make all checks payable to the award manager.

for a ten-day run from this Most Wanted one. A group of ten ops running bare-foot with ICOM IC-7000 radios were up and running on most bands as this was written. The QSL Manager for ZL8R is VE3XN.

## 2007 Operations

We now have several operations scheduled for early 2007, things to look forward to in the new year.

January 10-16 a group is planning to be active from **Bangladesh (S2)**. Bangladesh has not seen much activity, so this one is sure to generate some big pile-ups.

March 9-20 will see activity from **Sprattly (9M0)** by a group from Japan and the Malaysian Amateur Radio Transmitters Society. More information on this one has been promised.

Slated for activity later in 2007 will be operations from locations in Africa, such as **Mali (TZ)** in April. Later in the year an operation from **Swains Island, KH8S**, is being planned by a large group, headed by Hrane, YT1AD. More details on that one will be forthcoming.

**Satish, 9N1AA**, is back on the air following a long period of time when he was not permitted to be active. He has sent his recent log to me for activity

# Best Home Weather Station Ever!

PROFESSIONAL QUALITY AT AFFORDABLE PRICES

- **MORE** frequent updates—every 2½ seconds!
- **MORE** alarm settings—over 70 parameters!
- **MORE** highs, lows, and graphs—over 80 in all!

With Vantage Pro2™ you get details on wind, rain, temp, barometric pressure, humidity, and your own local forecast. Wireless transmission up to 1000'. Cabled starts at \$495.

Order now or ask for your **FREE** catalog.

**800-678-3669**  
www.davisnet.com/ham



**DAVIS**  
Davis Instruments

3465 Diablo Ave,  
Hayward, CA 94545

Full-Year  
Warranty.  
30-Day  
Money-Back  
Guarantee.

CQR0612

## RigExpert SD - USB Transceiver Interface

“ONE USB CABLE DOES IT ALL INTERFACE”



Just ONE USB cable controls ALL interface functions, including dual audio input, audio output, CAT (or CI-V) control, and DC power directly from the USB cable.



The new RigExpert SD contains its own Sound Card, Microcontroller, Electronic Keyer, USB port, RAM, and FLASH ROM (for free updates). High-stability crystal control, AFSK and solid FSK.

RigExpert SD improvements include newly designed electronics on a surface mount circuit board, added RF immunity & an even lower noise floor.



CONTACT US

[www.rigexpert.com](http://www.rigexpert.com)  
TECH SUPPORT 410-272-9110

Graphics by GrafX, Las Vegas



**IC-746PRO**  
HF/6m/2m, 100w

**ICOM**



**IC-756 PRO III**  
HF/6m, 100w,  
32 Bit IF-DSP

**IC-U82**  
**IC-V82**  
IC-V82 VHF Ver.  
IC-U82 UHF Ver.



Celebrating  
27 Years



**IC-V8000**  
2 meter, 75w



**IC-2720H**  
2m/440MHz



**IC-7800**  
160-6m@200w, All Mode

**IC-7000**  
160m-10m/6m/2m/  
70cm/IF DSP/Color  
TFT Display



**IC-706 MKIIG**  
160-10m/6m/2m/70cm

**the HAM STATION**

P.O. Box 6522  
220 N. Fulton Avenue  
Evansville, IN 47719-0522

Store Hours (cst)

Mon-Fri 8AM-4PM

**800-729-4373**

**812-422-0231**

FAX 812-422-4253

[www.hamstation.com](http://www.hamstation.com)  
e-mail:sales@hamstation.com

**LARGE SELECTION  
OF USED GEAR**

Prices Do Not Include Shipping.  
Price and Availability Subject to  
Change Without Notice  
Most Orders Shipped The Same Day



## THE WPX HONOR ROLL

The WPX Honor Roll is based on the current confirmed prefixes which are submitted by separate application in strict conformance with the CQ Master Prefix list. Scores are based on the current prefix total, regardless of an operator's all-time count. Honor Roll must be updated annually by addition to, or confirmation of, present total. If no up-date, files will be made inactive.

### MIXED

5264 .....9A2AA	3980 .....I2PJA	3621 .....S53EO	3262 .....IK2ILH	2873 .....W2ME	2426 .....W6OUL	1947 .....K0KKG	1651 .....KX1A	1141 .....K5WAF
4846 .....W2FXA	3968 .....YU1AB	3560 .....K0DEQ	3227 .....K9BG	2752 .....W9IL	2415 .....K5UR	1826 .....W7CB	1643 .....N1KC	1016 .....RA1AOB
4735 .....W1CU	3956 .....VE3XN	3475 .....YU7BCD	3089 .....W9OP	2704 .....K2XF	2242 .....I2EAY	1741 .....AB5C	1556 .....W2OO	825 .....KL7FAP
4343 .....EA2IA	3703 .....I2UIY	3457 .....KF2O	3011 .....W2WC	2637 .....OZ1ACB	2172 .....VE6BF	1705 .....W2EZ	1522 .....N8BJQ	742 .....K5IC
4187 .....N4NO	3661 .....I2MQP	3375 .....WB2YQH	2897 .....9A4A	2457 .....JN3SAC	2024 .....AE5B	1662 .....SV1DPI	1287 .....K6UXO	648 .....KW0H

### SSB

4710 .....I0ZV	3395 .....EA2IA	2734 .....OE2EGL	2227 .....YU7BCD	2051 .....K5UR	1709 .....SV3AQR	1412 .....I2EAY	1145 .....EA3EQT	729 .....K7SAM
4266 .....VE1YX	3276 .....N4NO	2711 .....LU8ESU	2209 .....IK2QPR	2042 .....W9IL	1688 .....K17AO	1386 .....IK4HPU	1042 .....IZ0BNR	
3956 .....I2PJA	3155 .....I2UIY	2609 .....KF7RU	2196 .....W2WC	1848 .....K3IXD	1655 .....DL8AAV	1330 .....VE7SMP	984 .....KX1A	
3765 .....F6DZU	3142 .....CT1AHU	2595 .....EA1JG	2179 .....NQ3A	1827 .....AE5B	1611 .....W2ME	1305 .....SV1EOS	978 .....EA7HY	
3573 .....OZ5EV	3069 .....I4CSP	2557 .....IN3QCI	2082 .....I3ZSX	1763 .....W2FKF	1595 .....W3LL	1258 .....N1KC	950 .....IK8OZP	
3532 .....9A2NA	2930 .....KF2O	2431 .....G4UOL	2076 .....K2XF	1719 .....KQ8D	1480 .....AB5C	1202 .....AG4W	901 .....KU4BP	
3477 .....I2MQP	2857 .....4X6DK	2326 .....CX6BZ	2073 .....N6FX	1716 .....W6OUL	1458 .....JN3SAC	1183 .....AE9DX	816 .....VE6BF	

### CW

4593 .....WA2HZR	3094 .....LZ1XL	2503 .....KA7T	2213 .....OZ5UR	2017 .....VE6BF	1832 .....I2EAY	1272 .....K6UXO	915 .....N1KC
4346 .....K9QVB	3078 .....9A2NA	2476 .....W2WC	2167 .....N6FX	1987 .....W9IL	1793 .....EA7AAV	1202 .....WA2VQV	608 .....IK2SGV
3749 .....N4NO	2688 .....I2UIY	2440 .....I7PXV	2120 .....JN3SAC	1955 .....K5UR	1402 .....WO3Z	1109 .....KX1A	
3374 .....EA2IA	2632 .....W2ME	2437 .....EA7AZA	2093 .....IK3GER	1901 .....I2MQP	1386 .....AC5K	1042 .....VE1YX	
3339 .....VE7DP	2523 .....KF2O	2401 .....YU7BCD	2089 .....K2XF	1863 .....W6OUL	1334 .....RU0LL	947 .....K5WAF	

## CQ DX Field Award Honor Roll

The CQ DX Field Award Honor Roll recognizes those DXers who have submitted proof of confirmation with 175 or more grid fields. Honor Roll listing is automatic upon approval of an application for 175 or more grid fields. To remain on the CQ DX Field Award Honor Roll, annual updates are required. Updates must be accompanied by an SASE if confirmation is desired. The fee for endorsement stickers is \$1.00 each plus SASE. Please make all checks payable to the Award Manager, Billy F. Williams. Mail all updates to P.O. Box 9673, Jacksonville, FL 32208.

### Mixed

K2TQC .....235	JN3SAC .....194	W5ODD .....177
HA0DU .....228	W4UM .....193	K2AU .....177
VE3XN .....217	BA4DW .....188	N0FW .....176
K0DEQ .....207	F6HMJ .....182	ON4CAS .....175
KF8UN .....205	K2SHZ .....182	K8OOK .....175
N8PR .....200	N4NX .....182	
HA1RW .....197	K0CA .....181	
N4MM .....196	OK1AOV .....181	

### SSB

VE7SMP .....190	W4ABW .....177	DL3DXX .....175
K0DEQ .....180	N0FW .....176	
N4MM .....179	W4UM .....176	

### CW

DL3DXX .....203	OK2PO .....184	K0CA .....175
K0DEQ .....198	JN3SAC .....181	
W4UM .....184	N4MM .....177	

beginning in early October 2006. For all these "new" contacts, please send your card with SAE/postage to N4AA. Bureau cards will be the last thing I do. I handled cards for him the last time he was on the air. His computer was "lost" along with his logs for previous operations. However, he tells me that he now has "access" to those logs, but is not permitted to copy them. I'll be working with him to try to confirm the hundreds of cards received over the past three years. Please do not send another card. I'll do the best I can to get confirmation from Satish and will answer all the cards I can. Please be patient, as it will take some time to do this.

### Behavior in DX Pile-ups

A few comments on this, my pet project. I am pleased to say that a number of QSL Managers have agreed to include a leaflet of the "Uncle DX Suggestions" for behavior in pile-ups with cards they handle. Several thousand of these leaflets have already been printed and distributed. We hope this will allow the message to reach more people than just through the printed word here and in other places. All we want to do is get folks to think before they act when chasing DX. It will make DXing more enjoyable for everyone.

### W8QHG's 90th Birthday Celebration

What do you do for a DXer celebrating his 90th birthday? Well, for Bob Hall, W8QHG, a bunch of his DXer friends got together with members of his family on October 8 to celebrate his October 12 birthday. During the party, Garry,

## QSL Information

3A/F5RBB via F5RBB  
 3D2YH/R via JA0SC  
 3DA0GNR via N4GNR  
 3DA0GR via UT5UGR  
 3G1M via XQ1IDM  
 3Z6V via SP6DVP  
 4L3Y via DK6CW  
 4L6VG via UA6EZ  
 4O310SKY via YT6A  
 4X17A via 4Z4TL  
 4X17B via 4Z4TL  
 4X17C via 4Z4TL  
 4X17H via 4Z4TL  
 4X17I via 4Z4TL  
 4X17M via 4Z4TL  
 4X17MG via 4Z4TL  
 4Z0X via 4Z4KX

4Z17A via 4Z4TL  
 4Z17B via 4Z4TL  
 4Z17C via 4Z4TL  
 4Z17H via 4Z4TL  
 4Z17I via 4Z4TL  
 4Z17M via 4Z4TL  
 4Z17MG via 4Z4TL  
 5A24PA via PC1A  
 5B/GM4AFF via M0CMK  
 5B/ON9CIB via RA3AUU  
 5B4/G3PMR via 5B4AHJ  
 5B4/IT9SSI via IZ8CCW  
 5H3LV/A via VE3HO  
 5H5LV via VE3HO  
 5H6BA via DL4MMT  
 5H6IZ via DL4MMT  
 5N0GDS via GM0ULK

5N0W via OK1RK  
 5N43NDP via IK5JAN  
 5N44WHA via 5N0WHA  
 5R8AHH via RA3AMG  
 5R8DF via JK1PLZ  
 5R8HG via JA8WKE  
 5T5AI via F5IG  
 5T5BAB - pirate  
 5T0JL via ON8RA  
 5U7DW via I2YSB  
 5X1W via JA1DOT

*(The table of QSL Managers is courtesy of John Shelton, K1XN, editor of "The Go List," 106 Dogwood Dr., Paris, TN 38242; phone 731-641-4354; e-mail: <golist@golist.net>.)*

## The WAZ Program

### 6 Meters

80 .....JH1HHC

### 10 Meter SSB

579 .....W9VG

### 20 Meter SSB

1151 .....W9VG

### 160 Meters

238 .....K1FK 239 .....UA3BS

### All Band WAZ SSB

5011 .....OK1DH 5012 .....SM4YWO

### Mixed

8426 .....JJ1LID 8430 .....YU1EA  
8427 .....DJ6NH 8431 .....JA7OXR  
8428 .....YU1AST 8432 .....JL1ANP  
8429 .....YU1DX

### CW

492 .....JA1GBC 494 .....N5PHT  
493 .....VE3MWX

### RTTY

169 .....JR1NHD

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and \$1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for all CQ awards is \$6.00 for subscribers (please include your most recent CQ mailing label or a copy) and \$12.00 for nonsubscribers. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a CQ checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

## 5 Band WAZ

As of October 1, 2006, 705 stations have attained the 200 zone level and 1517 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:  
None

The top contenders for 5 Band WAZ (zones needed, 80 meters):

N4WW, 199 (26)	HA5AGS, 199 (1)
W4LI, 199 (26)	EA8AYV, 199 (27)
K7UR, 199 (34)	VE3XN, 199 (26)
W2YY, 199 (26)	W6XK, 198 (17, 34)
VE7AHA, 199 (34)	EA5BCX, 198 (27, 39)
IK8BQE, 199 (31)	G3KDB, 198 (1, 12)
JA2IVK, 199 (34 on 40m)	KG9N, 198 (18, 22)
IK1AOD, 199 (1)	JA1DM, 198 (2, 40)
DF3CB, 199 (1)	9A5I, 198 (1, 16)
GM3YOR, 199 (31)	K5PC, 198 (18, 23)
VO1FB, 199 (19)	K4CN, 198 (23, 26)
KZ4V, 199 (26)	G3KMQ, 198 (1, 27)
W6DN, 199 (17)	N2QT, 198 (23, 24)
W3NO, 199 (26)	OK1DWC, 198 (6, 31)
HB9DDZ, 199 (31)	W4UM, 198 (18, 23)
RU3FM, 199 (1)	US7MM, 198 (2, 6)
N3UN, 199 (18)	K2TK, 198 (23, 24)
OH2VZ, 199 (31)	K3JGJ, 198 (24, 26)
W1JZ, 199 (24)	W4DC, 198 (24, 26)
W1FZ, 199 (26)	F5NBU, 198 (19, 31)
SM7BIP, 199 (31)	OE2LCM, 198 (1, 31)
SP5DVP, 199 (31 on 40)	HA1RW, 198 (1, 31)
N4NX, 199 (26)	WK3N, 198 (23, 24)
N4MM, 199 (26)	W9XY, 198 (22, 26)
EA7GF, 199 (1)	KZ2I, 198 (24, 26)
N6HR/7, 199 (37)	WA5VGI, 198 (34)
JA5IU, 199 (2)	K7BG, 198 (17, 22)
CT3DL, 199 (26)	W7VJ, 198 (34, 37)
N0IJ, 199 (21)	W0CP, 198 (18, 40)
RU3DX, 199 (6)	K9MIE (18, 21)
N4XR, 199 (27)	
W0PGI, 199 (26)	

The following have qualified for the basic 5 Band WAZ Award:

HA7TM (170 zones)	W9VG (170 zones)
N5PHT (180 zones)	JA2EPW (160 zones)
KE3D (170 zones)	

**\*\*Please note: Cost of the 5 Band WAZ Plaque is \$100 (\$120 if airmail shipping is requested).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and \$1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for the 5BWAZ award is \$10.00 for subscribers (please include your most recent CQ mailing label or a copy) and \$15.00 for nonsubscribers. An endorsement fee of \$2.00 for subscribers and \$5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a CQ checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

W8OI, presented Bob with a "QSL Card confirming" the only DXCC entity he did not already have, Scarborough Reef. Now Bob, who is still an active DXer, has them all (sort of). In the photo elsewhere in this article, the small print shows the location as "Foney Rocks" and the QSL manager as "KNOT 2 Likely, Tobee, OK 74129."

As this is the December issue, let me wish each of you a very Happy Holiday, in whatever manner you celebrate it, and all the best for the New Year. May you work all the DX that comes your way, and may we all enjoy improving propagation. Until next time, enjoy the chase and Have Fun! 73, Carl, N4AA

Come join us for our  
**Fifth Annual  
Customer Appreciation  
Weekend**

**December 1, 2, & 3**

in-store equipment demos  
manufacturers' reps • giveaways  
special event-only savings

**KJI Electronics** (( )))

visit [www.kjielelectronics.com](http://www.kjielelectronics.com)  
KJI Store • 973-364-1930

## The RatTail Antenna Booster



<http://rattailantenna.com>

U.S. Patent  
April 2002



Patented device for handheld radios. It gives an increase in transmitted energy and sensitivity of 800% or more. Keep it in your pocket until you need it!

**Ideal for emergency communication!**

Available through both websites ...  
read reviews

<http://rattailantenna.com>

<http://www.universal-radio.com>

<http://www.universal-radio.com/catalog/hamanth/2714.html>

**Microsec R&D Inc.**  
Victoria B.C. Canada



**ELECTRIC  
RADIO  
MAGAZINE**

Tired of modern radios you can't work on and are hard to understand? ER is the monthly magazine for you! Send \$1 for a sample to:

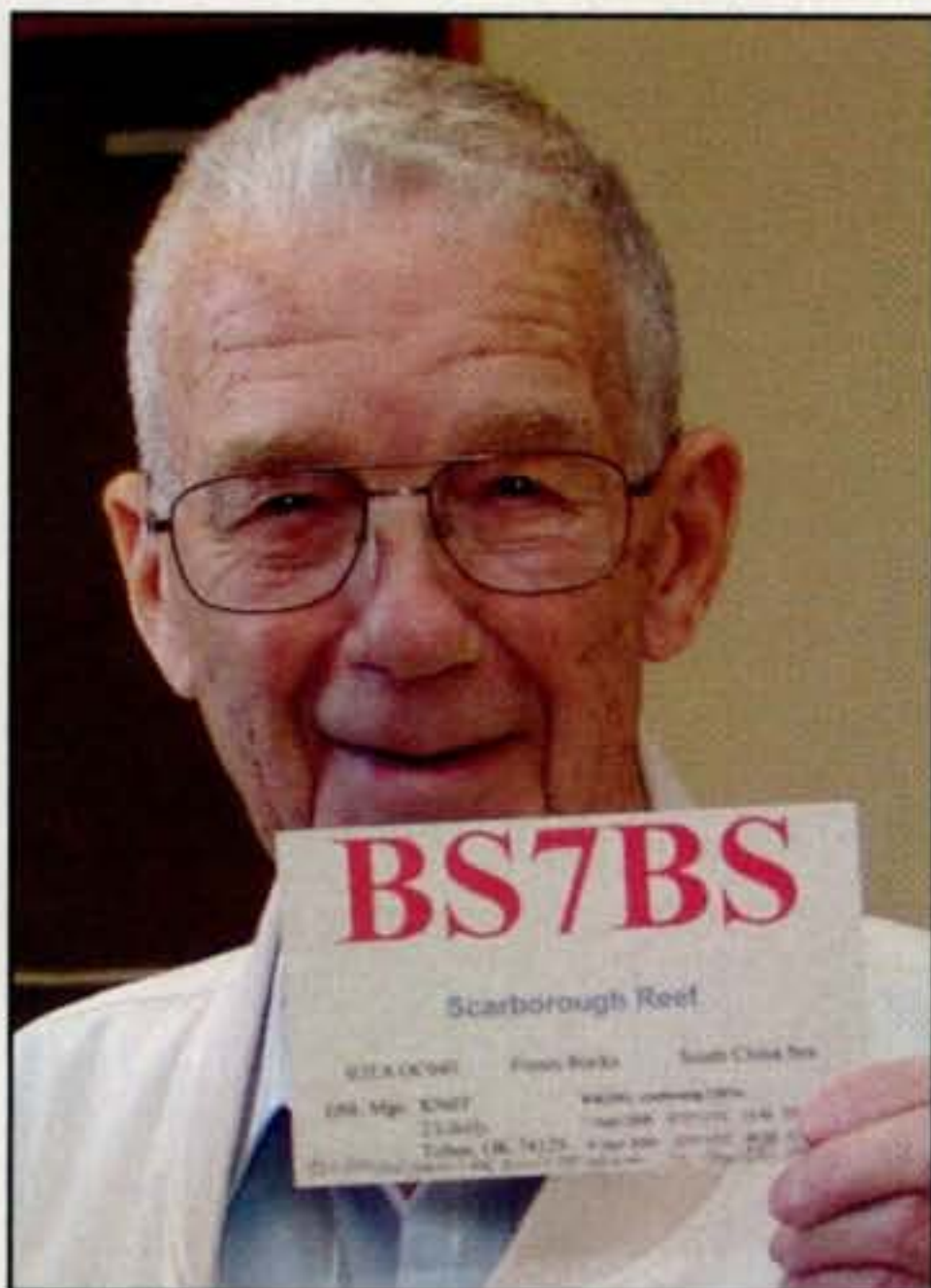
ER, PO Box 242,  
Bailey CO 80421-0242  
720-924-0171 or email:  
1Editor2@indra.com  
[WWW.ERMAG.COM](http://WWW.ERMAG.COM)



## Licensed Before 1982?

QCWA invites you to join with those distinguished amateurs licensed 25 or more years ago. Request an application from:

QCWA, Inc., Dept. C  
PO Box 3247  
Framingham, MA 01705-3247  
[www.qcwa.org](http://www.qcwa.org)



Bob Hall, W8QHG, at his 90th birthday party. A bunch of his DXer friends got together, along with members of his family, to celebrate his birthday on October 12. This picture shows Bob getting a great kick out of a "QSL card" delivered to him by Garry, W8OI, "confirming" the only DXCC entity he did not already have, Scarborough Reef. (Photo by Clark Stewart, W8TN)

# Single Band/Mode Endorsements for USA-CA All Counties

**A**lan Fischer, K8CW, earned his original USA-CA award in 1987, receiving #587. He recently provided proof of working all counties on the 30-meter WARC band, being the first station to earn a single-band endorsement for this band. His endorsement is dated September 13, 2006, and we give him a big round of applause for this "first" achievement.

After I made the internet announcement about Alan's achievement, I received an inquiry from Bill Pederson, KM1C, asking about single-band endorsements and USA-CA. This deserves some clarification. From the beginning, the USA-CA Award was designed as "one-time" award. Rule A says that special endorsements will be made for all one band or mode operations subject to the rules. The way this was written implies that such an endorsement will be made on the original application.

The only endorsement seals that Clif Evans, K6BX, designed were for the different levels of the award. Even today, most stations apply for a mixed band and mode USA-CA Award just to obtain the certificate. That's fine and is a major accomplishment in itself. A much smaller and devoted contingent struggles away and submits their first time application as all one band or one mode, or even one band-mode. Whew!

At this point, if you possess the award, and like many who are attracted to county hunting, you enjoy the challenge of the chase and the fascinating people involved, you might want to do it again. The Mobile Amateur Radio Club (MARAC) offers a variety of interesting county awards, including one for a second-time around, third-time around, etc. Check out: <http://www.marac.org/> for details.

For those who are interested in continuing under the rules of the USA-CA Award, it is possible to obtain endorsements that reflect your efforts in working them all again using a single mode or band. Let's say that you choose 20 meters SSB. If your original application contained 800 counties all of which were worked on 20 SSB, then this is your starting point. All you need to do is work the remaining 2277 counties on 20 SSB, send me a listing of *all* 3077 counties together with your certification and the two-witnesses certification that all were worked on 20 SSB, and I will provide you with an endorsement attesting to this achievement. Your USA-CA number remains unchanged. I will consider this effort to be an endorsement, and the endorsement fee is \$1.25.

\*12 Wells Woods Rd., Columbia, CT 06237  
e-mail: <k1bv@cq-amateur-radio.com>

## USA-CA Honor Roll

500

W3FEY ...3386 JA3DLE....3387 SV2CXI .....3388

The total number of counties for credit for the United States of America Counties Award is 3077. The basic award fee for subscribers is \$6.00. For nonsubscribers it is \$12.00. To qualify for the special subscriber rate, please send a recent CQ mailing label with your application. Initial application may be submitted in the USA-CA Record Book, which may be obtained from CQ Magazine, 25 Newbridge Road, Hicksville, NY 11801 USA for \$2.50, or by a PC-printed computer listing which is in alphabetical order by state and county within the state. To be eligible for the USA-CA Award, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated June 1, 2000. A complete copy of the rules may be obtained by sending an SASE to Ted Melinosky, K1BV, 12 Wells Woods Road, Columbia, CT 06237 USA. DX stations must include extra postage for airmail reply.

## Short-Term Award

**50th Anniversary of the Fight for Freedom Award.** Beginning on October 1, 2006 if you have worked Hungarian stations using the special prefix beginning with HA50 or HG50, you can use these contacts to earn a very handsome and historically significant award which commemorates the 50th anniversary of the Hungarian Revolution. This was the first popular uprising against Communist rule which led to the eventual collapse of the old Soviet Union and the freer Eastern Europe we know today.

The Hungarian Radio Amateur Society is commemorating the 50th anniversary of the revolution and fight for freedom of 1956. Hungarian radio amateurs may use special callsigns between October 1, 2006 and December 31, 2006. The first part of the callsign is either HA or HG, then the number 50, followed by the number-letter combination of the suffix. For example, if the call is HA1TJ, then if the radio amateur wants to make use of the opportunity provided by the license, the call will be HA501TJ. As you can see from the example, callsigns will range from 500 to 509. Use of the anniversary callsign is not compulsory for Hungarian stations.

In order to receive the award, contact 25 different Hungarian stations (five callsigns must begin



The Hungarian Radio Amateur Society's 50th Anniversary of the Fight for Freedom Award.



with HA50 or HG50). Contacts made with the same station on a different mode or on a different band are acceptable. All licensed bands and modes are available for use, but only direct contacts between two radio amateur stations count. Use of digital repeaters and/or other non-direct communication modes do not count. Send the award request verified by two licensees or the log extract along with the fee of 5 Euros, \$US7, or 10 IRCs to: MRASZ, Szovetseg u. 9, 1074 Budapest, Hungary.

### Bulgarian Federation of Radio Amateurs Awards

The national radio amateur association of Bulgaria (BFRA) offers a nicely designed and well-balanced awards program which provides a modest challenge to the certificate seeker. Bulgarian stations are well represented in most DX contests, and many of the country's operators are among top scorers in these contests.

**General requirements:** Available to radio amateurs and SWL's for CW, SSB/AM, and mixed modes. GCR lists are accepted. Fee for each award is \$US10 or 10 IRCs. Apply to: BFRA, P.O. Box 830, Sofia 1000, Bulgaria <<http://www.bfra.org/pages/index.shtml>>.

**Black Sea Award.** Make 60 contacts with different amateur stations located in countries bordering on the Black Sea. A minimum of one QSO with each of the following countries is required: LZ, TA, YO, UR, (ex-UB), 4L, EX UF, UA6A/



The Republic of Bulgaria Award for contacting countries bordering on the Black Sea.

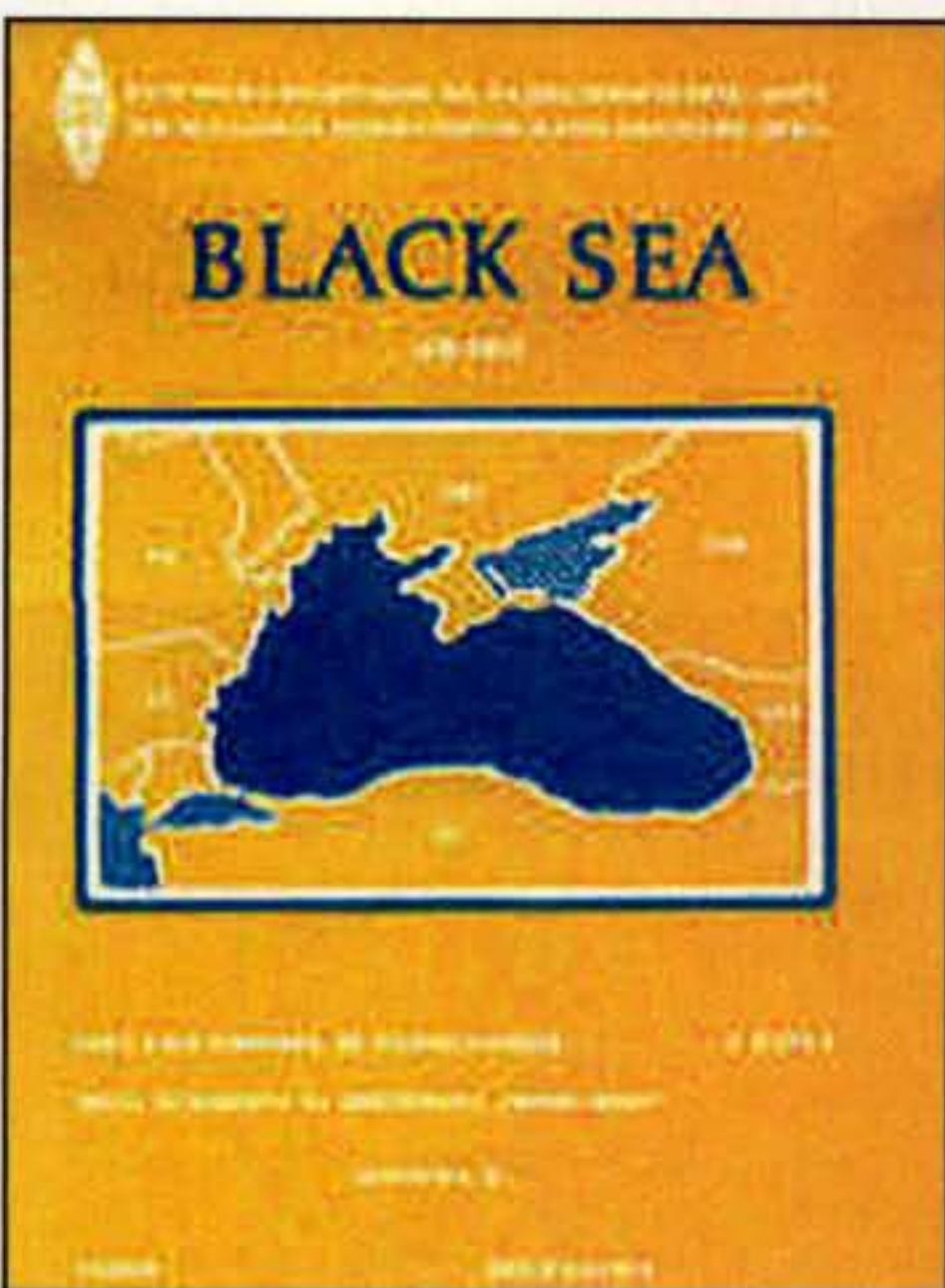


The Sofia Award is earned by contacting stations in the capital of Bulgaria.

UA6L. Contacts must have been made since January 1, 1979.

**Republic of Bulgaria Award.** Work Bulgarian stations since January 1,

1965. Europeans need 5 contacts with LZ1/LZ3/LZ5/LZ7 stations and 5 contacts with LZ2/LZ4/LZ6 stations on the 80- and 40-meter bands. A total of 20



The Black Sea Award, one of the Bulgarian Federation of Radio Amateurs' series of awards.

## Classic Radio Manuals By ManualMan

Quality Manuals For Amateur Radio, Audio & Radio-Related Equipment  
Over 15,000 Models Available

100% All Digital High Quality Replications – Satisfaction Guaranteed  
Now Stocking the Complete Line of "Nifty" Quick Reference Guides & Mini-Manuals

Visit the All New Web Site at <http://www.manualman.com>  
Order Online and Enter Coupon Number, 756870, and Save \$\$ On Every Purchase

ManualMan 27 Walling St., Sayreville, NJ 08872-1818 <http://www.manualman.com>  
Phone (732) 238-8964 or e-mail [manualman@juno.com](mailto:manualman@juno.com)

ManualMan Wishes Everyone A Very Joyous Holiday Season

### RF Amplifiers, RF Transistors, Chip Caps, Metal Clad Micaps & Hard to Find Parts



**HF Amplifiers**  
PC board and complete parts list for HF amplifiers described in the Motorola Application Notes and Engineering Bulletins:

AN779H (20W)	AN758 (300W)
AN779L (20W)	AR313 (300W)
AN762 (140W)	EB27A (300W)
EB63 (140W)	EB104 (600W)
AR305 (300W)	AR347 (1000W)



**Low Pass Harmonic Filters**  
2 to 30MHz



**HF Broadband RF Transformers**  
2 to 30MHz



**RF Transformers**  
2 to 300MHz  
Type "U"



**HF Power Splitters/Combiners**

2 Port:	PSC-2L Set	600W PEP
	PSC-2H Set	1000W PEP
	PSC-2H4 Set	4000W PEP
4Port:	PSC-4L Set	1200W PEP
	PSC-4H Set	2000W PEP
	PSC-4H5 Set	5000W PEP



**CCI Communication Concepts, Inc.**

508 Millstone Drive Beaver Creek, OH 45434-5840  
 Email: [cci.dayton@pobox.com](mailto:cci.dayton@pobox.com)  
[www.communication-concepts.com](http://www.communication-concepts.com)  
 Phone (937) 426-8600 FAX (937) 429-3811

contacts is required. All others need 10 contacts with LZ1/LZ3/LZ5/LZ7 and 10 with LZ2/LZ4/LZ6 with no band restrictions. A total of 20 contacts is required.

**Sofia Award.** Earn 100 points for contacts with stations located in Sofia, the capital of Bulgaria, after January 1, 1979. Points earned are calculated as follows:

Band	3.5	7	14	21	28
Europeans	2	2	1	2	2
All Others	15	5	1	2	3

Report with same station allowed only once per band irrespective of mode.

**W 28 Z ITU Award.** Contact the following countries of ITU Zone 28 since 1 January 1, 1979: DL, HA, HB, HBØ, HV, I, ISØ, LZ, OE, OK, OM, SP, SV, SV5, SV9, SV/A, S5, TK, T7, T9, YO, YU, ZA, Z3, 1AØ, 4U/ITU, 9A, 9H.

The award is issued in three classes:  
Class 1—28 different stations in 20 of the above-listed countries and 5 QSOs or SWL contacts with LZ.

Class 2—28 different stations in 16 of the above-listed countries and 5 QSOs/SWL contacts with LZ.

Class 3—28 different stations in 10 of the above-listed countries and 5 QSOs/SWL contacts with LZ.

### Internet Site of the Month

Many of us got our start in amateur radio in the ranks of SWLers, an "all band" radio in the parlor, listening to a distant AM station brought to us by skip conditions late at night. Even after we obtained our ham licenses, most of us had equipment that could tune the HF spectrum so we could listen to the BBC, Radio Moscow, and other stations that provided exotic music and a different point of view that we couldn't find on our



Contact countries in ITU Zone 28 to earn the W 28 Z ITU Award.

own AM bands. If you want to try something different and see what's going on in the world of HF broadcasting, a good place to go is <http://dxworld.com/swlmarks.html>. This site has a very large listing of links (many that unfortunately don't work, however), which include: clubs and SWL organizations, web pages of HF broadcasters, Internet Radio (use when bands are dead?), pirate stations, utility stations, and scanning and monitoring sites. There's a very interesting world on HF and VHF, and we hams are just a part of it.

Looking for some help in publicizing your group or club's award? *CQ* magazine can help. Please send details and samples to me for review.

73, Ted, K1BV

**Peter Zbinden, HB9BYZ**  
USA-CA All Counties #1139,  
July 20, 2006



Peter Zbinden, HB9BYZ, USA-CA All Counties #1139.

I was born in Burgdorf, Switzerland in 1940. I was first licensed as HE9GQF in 1965, became HB9MWU in 1976, and since 1980 have held the call HB9BYZ. I was an elementary school teacher from 1960 to 2000, and since I retired I have had plenty of time for amateur radio.

Shortly after I received the call HB9BYZ, I started hunting U.S. counties and was able to have many interesting contacts on SSB and CW. I especially want to mention Ron, NH6WL/W5, and his XYL Teresa, who live in Texas. On their mobile trips they have confirmed 82 counties just in Texas and Oklahoma.

I also was very active on the WARC bands and was the first Swiss confirmed contact for several U.S. amateurs. During contests these bands were a rich source of new counties as well.

After my retirement in 2000, I bought a laptop and accessed the internet. This was extremely helpful for finding the remaining counties I needed. I frequently visited [www.countyhunter.com](http://www.countyhunter.com), [www.ch.w6rk.com](http://www.ch.w6rk.com), [www.dx.qsl.net/propagation](http://www.dx.qsl.net/propagation), <http://.208.178.228.13/cgi-bin/flynn/trips.pl> (planned trips), [www.qrz.com](http://www.qrz.com), as well as various DX clusters.

My equipment includes a Kenwood TS-450S, TL-922 linear amplifier, and Yaesu FT-817. My antennas are a P-507 eight-element, seven-band beam by Sommer and a trap dipole for 40, 80, and 160 meters. My other interests include DXing, IOTA, and SOTA, and I have earned the 5B DXCC, 5B WAZ, DLD-1000, and H-28 awards, in addition to USA-CA All Counties.

I wish to say thank you to all the U.S. hams for the beautiful QSL cards from the 50 states which helped me obtain USA-CA #1139. Ted, K1BV, always processed all of my paperwork in a short amount of time, and thank you to him, too.

73, Peter, HB9BYZ

## Radio Programming Made Easy with RT Systems Software



V-8000



VX-5

Order on-line or from your favorite radio dealer.  
Since 1995, the original amateur radio programming software.  
Know what you're getting. Look for *RT Systems Software* on the label.



VX-170



IC-208

**1-404-806-3776**  
Personal assistance and tech support

**[www.cloningsoftware.com](http://www.cloningsoftware.com)**  
Ordering... Updates... Answers to Frequently Asked Questions

**Now Available For The New Yaesu VX-1802M**

Ask About  
NEW Version 3  
Programmers

# An Introspective Look at The Future of AMSAT

It has been a long and difficult six-year journey for officials at AMSAT following the November 16, 2000 launch of AO-40 and its subsequent failures. It has been a time of trying to figure out what went wrong and what can be done in the future to prevent another failure.

Perhaps the most difficult part of the journey has been the need to assess the failures without pointing the finger at who was at fault. The leadership at AMSAT-NA has carried out that responsibility with integrity and class. For example, according to its website account of AO-40, the following is reported concerning the failures (see [http://www.amsat.org/amsat-new/satellites/satInfo.php?satID=15&retURL=satellites/all\\_oscars.php](http://www.amsat.org/amsat-new/satellites/satInfo.php?satID=15&retURL=satellites/all_oscars.php)):

Shortly after launch a plugged valve vent on the 400 N motor prevented proper functioning of the burn valves and had probably allowed build-up of fuel pressure in the cooling coils around the motor bell housing. These coils apparently ruptured and in the process damaged one or (less likely) both of the burn valves. During cycling of the pressurization valve the following day, one component of the fuel apparently escaped from the damaged burn valve at the motor housing and mixed with residual second fuel component in the motor, creating a localized explosion. During this cycling (which should have been safe since the burn valves were indicated in the telemetry as closed) the spacecraft suddenly went silent. This pressure wave seems to have vented primarily through the centre section of the spacecraft, damaging the omni antennas on the opposite end and perhaps removing part of the covering from the omni end of the spacecraft. AO-40 was recovered several weeks later but several of the subsystems were no longer functioning.

In January of 2004, AO-40 suffered a catastrophic failure of the main battery which was clamping the buss voltage at a low level. This shut off the S2 TX, and probably crashed the IHU-1. Subsequent efforts to recover the satellite failed, and although the main and auxiliary batteries were tied together, there was not enough voltage at the time to recover the satellite.

As one can read from the above quote, part of the assessment of what went wrong is speculative, because barring a recovery of the satellite and a post-mortem examination of its components, it will be impossible to completely say what went wrong and caused the two failures. Even so, one can ask a couple of legitimate questions regarding the plugged valve vent on the 400 N motor: "Who forgot to pull the plug?" and "Why was it possible for someone to forget to pull the plug?" From AMSAT there will be no official answers to those questions—and that is as it should be, because assessing blame is never productive. In fact, it may even be counterproductive. What is more important is what has been implemented in the aftermath of these failures—a peer review process.

e-mail: [n6cl@sbcglobal.net](mailto:n6cl@sbcglobal.net)

## VHF Plus Calendar

The following is a list of important dates for EME enthusiasts:

Dec. 2	Moon Perigee.
Dec. 3	Moderate EME conditions.
Dec. 5	Full Moon.
Dec. 10	Good EME conditions.
Dec. 12	Last Quarter Moon.
Dec. 13	Moon Apogee.
Dec. 14	Geminids meteor shower peak.
Dec. 17	Poor EME conditions.
Dec. 20	New Moon.
Dec. 21	Winter Solstice.
Dec. 22	Ursids meteor shower peak.
Dec. 24	Moderate EME conditions.
Dec. 27	First Quarter Moon.
Dec. 28	Moon Perigee.
Dec. 31	Moderate EME conditions.

—EME conditions courtesy W5LUU.

According to AMSAT-NA board member Bob McGwier, N4HY, Project Eagle has implemented a rather exhaustive peer review process. Bob stated to your editor that each component's development will be subject to intense review by members of the development team. Additionally, each component will be prototyped and checked out in the run up to the anticipated 2010 launch. This announcement came in conjunction with the an-



Astronaut Bill McArthur, KC5ACR, was the keynote speaker for the 2006 AMSAT-NA Space Symposium. He delivered his address during the Saturday night banquet. (All photos by N6CL)



Emily Clarke, N1DID, of Project OSCAR, was the committee chair person for the symposium.

nouncement of what will make up the payloads of the Project Eagle satellite.

According to the AMSAT-NA website, the following payloads were approved during their board meeting on October 5, 2006:

- A SSB/CW (etc.) transponder with uplink on U-band and downlink on V-band. System design has a goal that it be usable over 75% of the orbit by an AO-13 or AO-40 capable ground station.
- A SSB/CW (etc.) transponder with uplink on L-band and downlink on S1-band (2.4

GHz). An AO-13 or AO-40 capable ground station will be able to use this payload.

- A low rate text message system, like SMS. It will operate on U/V-bands and be usable over 75% of the orbit by a small terminal on the ground.

- These transponders will be implemented using Software Defined Transponders (SDX).

Eagle will also carry an advanced communications payload (ACP). Using advanced signal processing and RF techniques, the ACP will allow:

- Voice communications on S2-band (3.4 GHz) uplink and C-band (5.8 GHz) downlink using a single 60-cm dish. The satellite antennas will be electrically steered to reduce spin modulation and allow use over 75% of the orbit.

- An additional, fix-pointed uplink will be available at L-band. This L-band uplink will require a separate uplink antenna at the ground station. The L-band uplink is intended to allow users in Region 1, where 3.4 GHz is not currently allocated to the Amateur Satellite Service, to use the ACP legally, by transmitting on L-band.

- High-rate data communications, such as streaming video, using a 2-m dish on S2/C bands.

- AMSAT will develop and make available an affordable ground segment for the ACP System.

One way in which the payloads are to be tested will be via SuitSat-2. In a planning meeting, members of the SuitSat-2 development team met and discussed the payloads that will be a part of this SuitSat, which is hopefully scheduled to be launched next fall as a commemoration of the 50th anniversary of the beginning of the Russian space program. It was decided that several components that will be a part of this SuitSat will be prototypes of components that will be a part of Project Eagle. It is hoped that experiencing the operations of these components will contribute to the ulti-

mate development of the payloads for Project Eagle.

One way in which a component has already undergone testing was by way of the successful launch and recovery of the ARBONET-1 high-altitude balloon on September 30. This launch was a joint project of the North Texas Balloon Project and the Fannin County Amateur Radio Club. Part of the payload was an SSTV Image Downlink System that performed well, according to a preliminary report made available to your editor by Steve Bible, N7HPR, at the time of the writing of this column. According to Doug Loughmiller, W5BL, the SSTV operation performed well for 45 minutes during the balloon flight. The hardware has been sent back to the SuitSat people for further analysis. More information on the launch can be found at <<http://www.ntbp.org>>. This SSTV Image Downlink System is scheduled to be one of the payloads onboard SuitSat-2.

McGwier discusses additional revisions in Project Eagle in his paper in the 2006 (October 6-8) AMSAT-NA Space Symposium's *Proceedings*. A copy of the *Proceedings* may be purchased online from the AMSAT website: <<http://www.amsat.org>>.

Developing and subsequently launching Project Eagle will not be cheap. According to AMSAT-NA former president Robin Haighton, VE3FRH, AO-40 ultimately cost an estimated \$4.5 million. Development costs for Project Eagle are projected to be around \$600,000. It is unknown at this writing what the launch cost might be.

To fund this project, AMSAT has a campaign under way that thus far has raised about \$125,000. Their goal is to raise \$150,000 by the end of this year.



Jim Sanford, WB4GCS, presented an update to the Project Eagle during the symposium's forums.



Bob McGwier, N4HY, spoke to the group about the peer review program in Project Oscar, as well as other changes in the program.



Bob Twiggs, KE6QMD, spoke to the symposium's participants about how to get involved in Stanford University's Small Satellite Program.

All in all, a tremendous amount of optimism was evident at this year's symposium. The leadership worked very hard to preach the message that AMSAT-NA has turned a corner in its future development. Your editor believes that the congregation has heard the message and is in the process of becoming believers in AMSAT-NA's future.

### The Education Component

AMSAT's leadership is very supportive of education. Evidence of this is the appointment earlier this year of Paul Shuch, N6TX, as AMSAT's Director of Education. Paul publishes his column "The Orbital Classroom" in both the *AMSAT Journal* and *CQ VHF* magazine.

Among the presenters at the symposium with an education component were: Ian Ashley, ZL1AOX, who spoke on the development of the KiwiSat, which is a AMSAT-ZL project that is being developed in conjunction with Massey University, Auckland; Bob Twiggs, KE6QMD, who discussed Stanford University's small satellite project and his need for mentors for their \$500,000 project, which is scheduled to run the next three years; and Bryan Klofas, KF6ZEO, and Kyle Leveque, KG6TXT, who spoke on Cal Poly San Luis Obispo's CubeSat program. Other presenters also spoke of the necessity for education as a major component of AMSAT's future.

Also present at the symposium was Mark Spencer, WA8SME, the ARRL's Education and Technology Program Coordinator. Curiously, in separate conversations I had with Mark and AMSAT President Rick Hambly, W2GPS, they

both brought up the fact that further follow-up needs to take place in the aftermath of ARISS (Amateur Radio aboard the International Space Station) QSOs. They both made the point to me that in the run up to the QSO there is a lot of excitement and intensity. However, after the QSO, often there is no follow up with the school leadership concerning keeping the subsequent interest in space communications going.

### The NASA Connection

The AMSAT symposium was fortunate to have as its keynote speaker Astronaut Bill McArthur. For more than an

hour, Bill entertained and educated the banquet participants about what it is like to be in space.

Another component of the symposium was the Sunday afternoon trip to the NASA Ames Research Center. Participants heard Dr. Scott Sandford, NASA Principal Investigator and co-director of the NASA Ames Astrochemistry Laboratory, give a key presentation during the tour of the center. Dr. Sandford spoke in general on sampling returns from comets and asteroids, and specifically about the Stardust Sample and Return Mission to Comet Wild 2.

After Dr. Sandford's talk, participants were invited to tour the Exploration Center. Among the exhibits that caught your editor's attention was a mockup of an experimentation room in the International Space Station. This included both dummy and real components from the ISS.

### Thank You

Many thanks go to Emily Clarke, N1DID, and the other members of Project OSCAR, who did such a wonderful job of organizing and hosting the symposium. Along with organizing and hosting the event, the group also gave very informative talks on the history of Project OSCAR.

### Current Meteor Showers

Two showers occur this month. The first, the *Geminids*, is predicted to peak on 14 December. The actual peak can occur 2.5 hours before or after the pre-

## Connect The Easy Way with USB!

### End your RS-232 serial port problems!

Timewave's enhanced USB equipment line-up will solve your RS-232 serial port problems. Built-in USB ports with unique addresses permit multiple device connections in your station.

- PK-232/USB Data Controller
- PK-96/USB Packet TNC
- HamLinkUSB Rig Control Plus
- TZ-900 Antenna Analyzer
- U232 RS-232-to-USB PCB-mount Conversion Module
- U232C RS-232-to-USB Cable Adapter
- Upgrade your Timewave/AEA PK or DSP TNC to USB



HamLinkUSB Rig Control Plus PTT & Keying

**NEW!**



651-489-5080 ■ Fax 651-489-5066 ■ sales@timewave.com ■ www.timewave.com  
1025 Selby Ave., Suite 101 ■ St. Paul, MN 55104 USA

dicted peak. It has a broad peak and is a good north-south shower, producing an average of 100–120 meteors per hour at its peak.

The second, the *Ursids*, is predicted to peak on 22 December. It is an east-west shower, producing an average of greater than 10 meteors per hour, with the possibility of upwards of 90 at its peak.

For more information on the above meteor shower predictions see Tomas Hood, NW7US's "Propagation" column elsewhere in this issue. Also visit the International Meteor Organization's website: <<http://www.imo.net>>.

## Are You Someone's Hero?

The following is my editorial from the Fall 2006 issue of *CQ VHF* magazine. It highlights a wonderful coincidence that my wife Carol and I experienced on our way home from the symposium. Considering that this month's column is devoted to AMSAT, it has application here as well:

Sometimes on our life's journey we experience a set of circumstances that lead to a wonderful conclusion. Such was the case for my wife, Carol, W6CL, and me as we journeyed home from the AMSAT Symposium this October.

On our trip home we were scheduled on a flight out of Denver that was overbooked. We volunteered to be bumped and subsequently ended up on the next Tulsa-bound flight, which necessitated our having to go to a new departure gate.

After arriving at the gate, we sat down and immediately began overhearing a conversation between two men behind us. One man was being friendly and asking the other man why he also was traveling to Spokane, Washington. The other man stated that he was scheduled to give a lecture at a community college on Tuesday on repairing the Hubble telescope while in space.

The mention of that topic caught the attention of both Carol and me. I turned around and looked at the man who was talking about his being an astronaut and then asked him his name. He told me who he was: Dr. Story Musgrave. I identified myself as an amateur radio operator and then told him that Carol and I were on our way home from a symposium in San Francisco where we had met astronaut Bill McArthur. I then asked him if he was a ham radio operator, because, as we know, almost all U.S. astronauts today do obtain their ham radio licenses.

Dr. Musgrave stated that while he was not a ham radio operator, he had flown on STS 51F with Tony England, WØORE, a name that immediately resonated with Carol and me because Tony is a hero in the ham radio community for being the second ham radio operator to communicate from space (the first was Owen Garriott, W5LFL).

During our all-too-brief conversation, Dr. Musgrave was an extremely gracious and unassuming person. As it is, he is one of the most accomplished astronauts, having flown on six missions, including each of the shuttles, during his 30-year career with NASA. Along with being a very fancy mechanic, he is also a surgeon and a poet, to name just a few of his accomplishments.

Even so, as with so many other astronauts, Dr. Musgrave recognizes that he has taken on hero status in the hearts of so many of us around the world. As such, he patiently takes time to engage in conversations with total strangers. Such was the case with Carol and me.

This was also the case with astronaut Bill McArthur. When we met Bill at the symposium, he could not have been more gracious to us and to the others with whom he conversed over the weekend.

In a conversation I had with Lou McFadin, W5DID, while at the symposium, he told me that he was so glad that Bill was a part of the symposium because he had been telling people about Bill's gracious manner for a long time. He stated that now others could see Bill's unassuming manner for themselves. I readily agreed with Lou's assessment of Bill.

Dr. Musgrave and Bill are true heroes because of their accomplishments. More than their accomplishments, however, they share their heroic adventures with young people by being involved with youth and young adults.



*NASA Exhibition Center contractor Margaret McCrary demonstrated an experiment panel that had previously been on board the International Space Station as part of the NASA Ames Research Center.*

All of this commentary about Dr. Musgrave and Bill McArthur is lead me to ask: Are you somebody's hero?

My work as a United Methodist minister has reinforced for me the fact that we are living in a world that often is lacking in true heroes and role models for our children. Too often, today's children are products of broken and dysfunctional homes. As a result, these children know very few adults who serve as role models, let alone heroes.

This void of heroes has to be filled in some way. Unfortunately, too often this void is filled by those of less than desirable reputations, which only exacerbates these children's situations.

Here is where we as hams need to step in as role models and heroes for those children with whom we can have a positive influence. We can become these role models and heroes through a variety of different journeys. The easiest way is to invite children and youth to our amateur radio club meetings.

A more involved commitment may be by way of volunteering at a local school. For example, your school might have an opportunity where you can have lunch with one or more of the students via a program called "lunch buddies." You might also volunteer to be a teacher's aide for a science teacher.

Again, as a minister, I would also encourage those of you who are involved in your place of worship to volunteer to work with your youth department. Your priest, minister, or rabbi would be most pleasantly surprised to know of your interest in working with your congregation's youth.

If your interest is in small satellites, you might also be interested in volunteering for a program that professor Bob Twiggs, KE6QMD, announced at the AMSAT Symposium. Bob spoke of Stanford University's Small Satellite Program and how it has received a grant of \$500,000 to be spent over the next three years in developing and nurturing graduate students in their work on small satellites. Bob indicated that he will be needing mentors from around the country to work with these students and that it is possible to receive travel remuneration for your work as a mentor. If you are interested in assisting Bob, then contact him at <[bob.twiggs@stanford.edu](mailto:bob.twiggs@stanford.edu)>.

Few of us can be heroes on the level of Dr. Musgrave or Bill McArthur. However, each of us can answer our individual calling to be a hero to someone—or even to a number of young people. Therefore, I urge each of us to consider just how we might be that special hero to those whom we can influence.

## And Finally . . .

If you have a story to tell about being a hero to some young people please let me know about it. If it has a VHF spin to it, you might find it published in a future issue of *CQ* or *CQ VHF* magazine. Until next month...  
73 de Joe, N6CL

# Improving Your CW Contesting Skills

BY JOHN DORR, K1AR

Contesting

## December's Contest Tip

Be aware of receiving conditions on "the other end." For example, 20 meters always sounds better on the western side of the early-morning high-band openings. In reality, the band is flooded with QRM on the eastern side and is giving you the impression that there are clear frequencies everywhere. The same is true for late-afternoon openings on 80 and 40 meters. In addition, there are a number of man-made noise sources. What sounds like a quiet band on one side may be a QRM nightmare on the other side of the world due to over-the-horizon radars and other systems. Keep this in mind as you make your strategic operating decisions. What you hear may not be what "they" hear!

Last month we tackled methods to improve your phone skills in contesting. Now it's time for the CW side of the equation.

Over the years, my experience has taught me that there is a basic truth in ham radio operating: While many operators excel at CW operating, there are just as many, or more, who need quite a bit of work to hone their skills. I can think of at least a hundred theories stating why this is the case. Many feel that the skill is "just in your genes." Others believe that it's a question of operating preference. Still others believe it's related to musical ability, or age at which Morse Code is learned, motivation, equipment, etc. The list goes on.

My personal experience is that CW always came easy to me. I know I'm one of the fortunate ones. I grew up with music around me (piano, French horn, choir, etc.), so perhaps I'm an example of how some musical ability affected my CW skill. Like many of my contesting peers, I entered the ranks of ham radio at the relatively young age of 13. In sharp contrast to the training tools of today, I had to learn the code the old-fashioned way. Maybe you remember that old red-covered ARRL Morse Code training book? I lived on Long Island, NY, at the time and was in relatively close proximity to the ARRL's W1AW transmitting station. It was ideal for copying Morse Code practice sessions. What provided further challenge to my learning curve, however, was the fact that the shortwave receiver I was using did not have a BFO (beat frequency oscillator). Imagine the demands of copying CW from pulsating bursts of "white noise" through a 3-inch speaker! I'm convinced that those early trials were the precursor to the contesting spirit I have today—a desire to push the limits of our operating environment to new heights.

There's serious debate in our hobby about the merits of Morse Code, especially from a license-requirement standpoint. Unfortunately, in my opinion, the world licensing community has made its position clear. Indeed, I feel confident in predicting that while CW will eventually disappear altogether

## Calendar of Events

All year	CQ DX Marathon
Nov. 18-19	SARL Field Day Contest
Nov. 18-19	LZ DX Contest
Nov. 18-20	ARRL SSB Sweepstakes
Nov. 25-26	CQ WW DX CW Contest
Dec. 1-3	ARRL 160M Contest
Dec. 2-3	TOPS Activity Contest
Dec. 9-10	ARRL 10 Meter Contest
Dec. 16	OK DX RTTY Contest
Dec. 16-17	Croatia CW DX Contest
Dec. 30	RAC Winter Contest
Dec. 30-31	Stew Perry Topband Challenge
Jan. 1	ARRL Straight Key Night
Jan. 6-7	ARRL RTTY Roundup
Jan. 7	Kid's Day
Jan. 27-28	CQ WW DX 160M CW Contest
Feb. 24-25	CQ WW DX 160M SSB Contest

as a requirement for obtaining a ham license on the world stage, it will continue to exist as a popular form of communication used by hams. Also, as you might expect, this will particularly be the case with contesters. Can you imagine only one CQ WW each year, only SSB? What then would we do on Thanksgiving weekends after the holiday festivities on Thursday? Watch boring college football games? Sort through our QSL card collections generated from SSB contacts (let's see . . . half the QSL load. Maybe this idea of one mode does have some merit!)?

Well, enough of the history lesson. Becoming a good CW contester begins with being a good CW operator and knowing the code. Unlike phone, where we already know how to talk, we need to learn a new language on CW. There really is only one element to becoming better at CW operating, and that is *practice*. What is the best, most efficient way to achieve acceptable operating ability? What is the most efficient use of your available practice time? The following give some ideas for you to consider.

## Experience on the Air Making QSOs

Making lots of CW QSOs outside of contests works wonders and is the best place to start. Put the microphone away for several weeks and eliminate SSB, SSTV, and digital-mode operating for the same time period. Instead, focus this time on 100% CW skill improvement.

Find QSOs in progress at a speed you can comfortably copy with a pencil/pen. Now put the pen/pencil down and just start listening. Try to recognize the letters as they come along, and group them into words on your mind's "blackboard." It's going to take some time, maybe even three or four weeks, before you can process those higher speed QSOs in your head without writing down everything! Jot down the call, the op's name, the QTH and report while just listening to the rest. Remember, when

\*2 Mitchell Pond Road, Windham, NH 03087  
e-mail: <K1AR@contesting.com>

## 2005 CQ WW DX SSB & CW Contests Errata

### SSB Errata

K1VSJ was listed as a check log. His correct entry was SO L14 final score 81,738, QSOs 259 Zones 25, Countries 89, and a certificate winner. DAØCA Multi-Single ops were: DC2YY, DL1REM, DL3SF, DG2YBW, DJØACA, and DO1YCL.

The 8P9R Multi-Multi log was lost. Their score raw score was 11,508,514 Qs 8035, Zones 151, Countries 490. The operators were: K3LP, W3ARS, W3ADX, J69AZ, W3ADC, PY5EG, KY1V, N3KS, N3VOP, WB6CBU, K1LZ, 8P6SH.

### CW Errata

K2BA should have been listed as K2BA/5. K8IA/7 should have been listed as a certificate winner.

EA1RCO operator was EA1CVZ. OE8VIE's score was lost by the CQWWCC. His score was LA 242,634, Qs 861, Zones 44, Countries 174, and a certificate winner.

### Team Contesting Corrections

Neiger's Tigers Team #1: 6W1RW (F6BEE), P40W (W2GD), 3DAØNW (K9NW), 8P5A (W2SC): 34,737,019. Placed #2 in the Team category.

Neiger's Tiger's Team #2: KH7X (KH6ND), C6AWS (W6SJ), V26K (AA3B), CT8A (CT1ILT), W9RE: 17,112,961. Placed #6 in the Team category.

Neiger's Tigers Team #3: PS2T (N6AA), 9G5GJ (N6ZZ), ZD8A (K6NA), CT3EN (CT1BOH), 9Y4AA (N6TJ): 40,696,896. Placed #1 in the Team category.

Neiger's Tigers Team #4: K8IA/7, PJ7/K7ZUM, W1KM: 5,124,044. Placed #15 in the Team category.

Neiger's Tigers Team #5: K7OX, W7WHY, KG6DX, NC2N (EW1AR), N7ZG: 3,020,554. Placed #20 in the Team category.

The Carolina DX Association total should have been listed as 17,672,958, not 862,007.

The following 3.5 MHz logs were mistakenly all placed in the high power category. Their correct categories are shown below + new top score boxes. Certificates have been awarded to the winners. The CQ WW Contest Committee regrets this error. Columns throughout the errata represent Call, Band, Score, QSOs, Zones, and Countries.

#### NEW Top Scores Box Low Power 3.5 MHz

**World**

YU1KR	3.5	244,419	1599	22	91
GM4FAM	3.5	214,630	1281	24	103
IU1A	3.5	206,618	1229	23	95

(OP:IK1SPR)

7S7V	3.5	154,809	1254	18	85
------	-----	---------	------	----	----

(OP:SM7VZX)

YT2A	3.5	145,410	1102	21	90
------	-----	---------	------	----	----

(OP:YZ1SG)

OK1FZM	3.5	139,625	793	25	100
--------	-----	---------	-----	----	-----

**Europe**

YU1KR	3.5	244,419	1599	22	91
GM4FAM	3.5	214,630	1281	24	103
IU1A	3.5	206,618	1229	23	95

(OP:IK1SPR)

7S7V	3.5	154,809	1254	18	85
------	-----	---------	------	----	----

(OP:SM7VZX)

YT2A	3.5	145,410	1102	21	90
------	-----	---------	------	----	----

(OP:YZ1SG)

OK1FZM	3.5	139,625	793	25	100
--------	-----	---------	-----	----	-----

**USA**

AD4Z	3.5	79,492	283	25	94
N2WN/4	3.5	74,368	263	22	90
K2TA	3.5	33,180	158	12	67
W3NO	3.5	30,841	—	—	—

**World**

YU1KR	3.5	244,419	1599	22	91
GM4FAM	3.5	214,630	1281	24	103
IU1A	3.5	206,618	1229	23	95

(OP:IK1SPR)

7S7V	3.5	154,809	1254	18	85
------	-----	---------	------	----	----

(OP:SM7VZX)

YT2A	3.5	145,410	1102	21	90
------	-----	---------	------	----	----

(OP:YZ1SG)

OK1FZM	3.5	139,625	793	25	100
--------	-----	---------	-----	----	-----

K8DO	3.5	20,303	134	17	62
K3XO/8	3.5	19,866	116	10	56

The following scores were placed in the wrong category by a CQ WW software problem. We apologize for this mistake. We know how hard many of you worked to make excellent scores. Certificate winners are shown in bold.

#### QRP 3.5 MHz scores wrongly classified as High Power

LY5A	3.5	138,575	901	20	95
------	-----	---------	-----	----	----

(OP:LY2ZZ)

LZ5T	"	68,464	680	15	73
------	---	--------	-----	----	----

(OP:LZ3RR)

LY5G	"	52,338	598	12	66
------	---	--------	-----	----	----

(OP:LY2FE)

LY2GW	"	51,528	606	11	65
OK2VWB	"	30,464	368	10	58
DF3KV	"	23,532	316	15	59
I1BAY	"	23,146	365	11	60
DL5CL	"	16,017	260	9	48
SM5MX	"	13,585	253	7	48
RV6LA	"	11,327	247	8	39
OM4APD	"	8,415	202	7	38
G5YC	"	7,182	95	11	52
7K1CPT	"	612	21	8	9
JE1SCJ	"	224	8	6	8

#### Low Power 3.5 MHz scores wrongly classified as High Power

7S7V	3.5	154,809	1254	18	85
------	-----	---------	------	----	----

(OP:SM7VZX)

8S6A	3.5	11,475	259	6	39
------	-----	--------	-----	---	----

(OP:SM6DPF)

AD4Z	3.5	79,492	283	25	94
N2WN/4	3.5	74,368	263	22	90
K2TA	3.5	33,180	158	12	67
K8DO	3.5	20,303	134	17	62
K3XO/8	3.5	19,866	116	10	56
K4DLJ	3.5	12,596	83	12	55
W5GZ	3.5	1,560	29	11	15
N4GU	3.5	1,209	26	9	22
K3WGR	3.5	1,050	54	8	34
DJ6BQ	3.5	129,030	1024	18	84
DL6KWN	3.5	43,168	496	12	64
DL1ET	3.5	24,600	269	11	64
DK7AN	3.5	7,810	116	9	46
EA1EB	3.5	7,198	102	8	51
EK3SA	3.5	10,800	108	6	30
ES6CO	3.5	3,510	78	9	30
F5PHW	3.5	23,760	348	10	56
GM4FAM	3.5	214,630	1281	24	103
HA8KW	3.5	124,072	944	21	83
IU1A	3.5	206,618	1229	23	95

(OP:IK1SPR)

IK3SSO	3.5	93,900	796	23	77
IK2AOO	3.5	91,630	872	15	62
IØYQV	3.5	5,974	104	10	48
J45A	3.5	8,507	189	8	39

(OP:LY1DF)

JA6GCE	3.5	45,591	247	26	65
JA3GN	3.5	16,817	122	23	44
JH6WHN	3.5	16,491	117	22	47
JH1APZ	3.5	11,220	94	21	39
JR4PMX/1	3.5	10,150	70	21	37
JF2WXS	3.5	5,876	63	17	35
JAØFVU	3.5	2,916	53	14	22
JA1XEM	3.5	592	17	7	9
JA9DOF	3.5	361	15	8	11
JA1VVH	3.5	220	17	10	10
JF7VVL/7	3.5	180	8	6	6
LY1DT	3.5	63,800	669	15	73
LY4AX	3.5	21,708	296	10	57
LY2BNL	3.5	2,665	62	7	34
OH3WS	3.5	7,168	106	10	46
OK1FZM	3.5	139,625	793	25	100
OK1FHI	3.5	92,778	827	17	77
OK1QM	3.5	91,759	828	15	74
OK2YT	3.5	70,043	609	15	74

(OP:OMØWR)

PR7AR	3.5	22,572	198	13	53
RN9AA	3.5	109,446	485	15	72
S52W	3.5	119,392	981	16	75
SM6CNN	3.5	278,320	1361	30	112
SP8BRQ	3.5	361,934	1479	30	116
SP4MPB	3.5	263,994	1417	29	109
SN5J	3.5	58,847	609	14	69

(OP:SP5JXK)

SO9O	3.5	12,900	145	17	83
------	-----	--------	-----	----	----

(OP:SP9P)

RW4PL	3.5	245,544	1054	33	123
UA6AAY	3.5	108,748	717	25	99
UT3UA	3.5	321,860	1527	28	112
VC6R	3.5	91,512	547	27	55

(OP:VE6RST)

VE6WZ	3.5	22,563	148	22	47
VR2KW	3.5	102,918	608	24	78

OL7P	3.5	63,750	774	14	71
------	-----	--------	-----	----	----

(OP:OK1CRM)

OK2TRN	3.5	52,851	557	14	65
OK1IBP	3.5	45,846	483	13	68
OK1FOG	3.5	29,380	424	12	53
OK1FC	3.5	17,550	231	11	54
OK1ICJ	3.5	10,500	123	12	58
OK5AA	3.5	8,400	169	7	41
OM7RU	3.5	76,360	785	15	68
ON4CCP	3.5	65,268	870	11	52
OR5N	3.5	18,688	290	9	55

(OP:ON4NOK)

OZ7BQ	3.5	48,208	377	17	75
OZ7AEI	3.5	12,060	170	11	56
PA3ADJ	3.5	7,240	200	8	32
PV8AZ	3.5	1,020	83	9	21
RK2FXG	3.5	5,100	140	5	29
RU3FM	3.5	84,112	550	21	91
UA3WU	3.5	73,914	635	19	78
RW4WM	3.5	73,600	670	15	77
RW1ZZ/3	3.5	68,495	545	17	78
UA3DTT	3.5	8,200	139	8	42
RW4HM	3.5	6,200	99	9	41
RX4HB	3.5	2,886	72	10	29
RA1QX	3.5	1,305	43	7	22
UA6ATG	3.5	143	8	5	8
RW9QA	3.5	15,054	139	8	31
RWØAJ	3.5	4,719	69	10	29
SP4JCQ	3.5	75,225	965	14	71
SP8BVN	3.5	43,512	540	12	62
SP3DIK	3.5	17,446	247	10	51
SP9DUX	3.5	10,528	219	7	40
US9PA	3.5	71,101	571	17	80
UW8SM	3.5	27,729	321	13	66
UR5IHQ	3.5	11,648	221	10	46
VE3NZ	3.5	33,000	357	11	39
XE1NW	3.5	32,725	288	14	41
YC2MXV	3.5	3,672	50	19	32
YL3GDQ	3.5	66,483	694	16	67
YO2AQB	3.5	18,414	515	11	51
YU1KR	3.5	244,419	1599	22	91
YT2A	3.5	145,410	1102	21	90

(OP:YZ1SG)

YU1EQ	3.5	47,600	494	16	69
YT1VP	3.5	44,109	472	16	71

(OP:YZ1SG)

**Assisted 3.5 MHz scores wrongly classified as High Power single operator**

DL7ON	3.5	346,500	1410	31	123
DL1RG	3.5	52,170	362	17	77
EA1WX	3.5	64,214	509	16	81
EU1AZ	3.5	251,844	1531	25	99
F6FJE	3.5	67,405	662	14	71
GM5A	3.5	100,687	650	23	84

(OP:MMØCCC)

HB9DDO	3.5	48,640	407	16	60
IZ8GCB	3.5	116,424	1002	20	78
JS3CTQ	3.5	33,620	169	25	57
JAØFVU	3.5	2,916	53	14	22



using high-speed CW, you'll be receiving letters/word spaces at three-per-second for 36-wpm CW rates or greater. This is a typical speed for QRQ DX and contest operating.

## Using the Computer for Practice

If you have one of the popular CW programs available today, here is how to use it to become QRQ qualified. Remember that we're focusing on methods to process CW mentally, and not writing down or typing anything as you receive it. That comes later.

With lots of CW text stored in your computer program, you are ready to begin. Once you have determined your present 100% comfortable hand-copying speed using pencil or pen, set your computer program to send clear text at about 5 wpm faster than your hand-copying speed. Begin sending text at this speed and then sit back and just listen for 30 minutes, twice per day. First you will only be catching a letter every now and then. While this happens, you will miss the next several letters! However, keep at it. Soon you will get all the letters of a single word. Again, congratulations as you say the word to yourself, and again a lot of letters/words go on by unrecognized! You are making progress, though. As soon as you are at this new level, increase your speed by another 5 wpm. Keep it up, and in three or four months you may be up to 40 or more wpm! Remember, too, that computer-generated CW, such as that from many of the popular CW practice programs, produces top scores that originate from over 450 letters/numbers/spaces per minute! Try it. It works!

## CW Sending Practice Helps

Don't practice sending by using your computer keyboard! Use your electronic keyer and paddle to send "perfect" CW characters, spacing, and rhythm. It's a big help in your mental training activity. Adjust the paddle to operate with very light action. You don't want to be slapping the key all about the tabletop! Good paddle keys are heavy just for this reason.

Now begin practice by attempting to send fast. This sending practice also works wonders as you begin your progress to becoming a QRQ operator. Why? It forces you to form words to express ideas in your mind, while simultaneously sending the thoughts as CW. This inverts what has been going on in your mental processes to receive CW. As you increase your speed ability, you

will not even be thinking "letter to CW" translation, but will mentally and automatically be sending CW as if it were another language with which you have become quite comfortable. Your mind will be training in CW in such a way that when sending fast, the same subconscious patterns to receive fast will be used.

There is more to encourage you to practice. Once you are able to mentally send at QRQ speeds and accurately enter calls/exchanges into a contest logging program, you also may want to practice clear text copying to the keyboard, and copying behind many, many words. Your QRQ mental rate will increase even more, and you are well on your way to being a competent, competitive CW contest op!

## Contest Applications

Whether you are an expert CW operator or a pending prodigy, being able to send/copy CW is only half the battle when trying to excel in contests. Here are a few tips that you may want to consider independent of your speed level.

**Sending Speed.** By definition, selecting one's sending speed is a subjective decision. Am I sending too fast? Should I send faster to improve my rate? Here are some guidelines that I use:

- I tend to send faster at the beginning of a contest when the rates are at their highest.
- When the rate starts to slow, so do I. My sending speed tends to mirror my operating environment.
- I always try to match the sending speed of the other station when calling someone.
- When you suspect the other station is having problems with receiving, slow down. There are no penalties for ensuring QSO information is correct or for making a QSO more efficient.
- Never send faster than you can copy (e.g., such as when using your logging program to send). The other station may actually be able to copy/send at that speed, requiring unnecessary repeats on your end.

**Use of the RIT/XIT.** Let's begin with the RIT (receiver incremental tuning). More often than you would think, stations call you off frequency after a "CQ Test." Don't miss out on those QSOs by avoiding the use of your RIT after a CQ. More important, don't start logging QSOs that are being made with other stations. A wandering RIT can be a useful tool. It's also a way to create "not in log" penalty QSOs if abused.

The XIT (transmitter incremental tuning) is a great way to work stations faster

in pile-ups. Just as with DXing, one of the best methods to work someone in a huge pile-up, especially if you have a modest station, is to "call them where they aren't." Think logically about it: If you have a large number of guys calling you, you're more inclined to listen to the edges of the pile-up and pick up what you can hear. That works to your advantage. Try calling stations a bit off frequency by using your XIT, and you'll be amazed at how effective that technique can be in a contest. It works for large and small stations alike.

**Choosing a Frequency.** One of the enjoyable aspects of CW contesting is that there is much more flexibility in the choice of operating frequency. With the exception of 40 meters, I don't necessarily believe that a low-end frequency choice (e.g., less than 21005) is a requirement for maximizing your QSO rate. In fact, for some domestic contests it's actually preferable to stay out of the Extra Class band to maximize your opportunity to work all participants. What prevails over any frequency choice is obtaining a clear spot. You'll always do better on a clear frequency high in the band than one that is crowded but down low in the band.

## And Finally...

CW is definitely not a dead mode. As amazing as it sounds, a large number of ops within our ranks actually prefer it. I'm one of them! Over the years, some—such as my long-time friend Bill, K1GQ—designed their stations exclusively for CW. Bill may own a microphone, but I doubt if off the top of his head he knows where it is! I firmly believe that contesters and DXers together will be the group that ultimately drives the preservation of CW in our hobby. Only time will tell.

## Comments

In this column over the past two months I've focused on helping you improve your SSB and CW skills. Now the burden is on you. There is one guarantee: If you don't get on the air, you won't get better. That applies to both newcomers and experienced contesters. I'd like to offer a special thank you to Jim, AH6NB, and others who provided invaluable input to this month's column.

The contest season is in full swing. Amazingly, so are the holidays. I wish you and yours the best for this coming season. Take a minute or two to remember what's really important this time around!

73, John, K1AR

# Check Out What's Happening in the "Basement"

## A Quick Look at Current Cycle 23 Conditions (Data rounded to nearest whole number)

### Sunspots

Observed Monthly, September 2006: 15  
Twelve-month smoothed, March 2006: 17

### 10.7 cm Flux

Observed Monthly, September 2006: 78  
Twelve-month smoothed, March 2006: 82

### Ap Index

Observed Monthly, September 2006: 8  
Twelve-month smoothed, March 2006: 8

**D**own in the dusty basement, during the long hours of darkness, there's some rather exciting activity. The basement of the radio spectrum, around 500 kHz, is dusty with radio noise, but that's not keeping some daring explorers from making a study of radio propagation. I'm planning a more in-depth look at this group and their activity, but in the meantime, I suggest that right now is the time when you need to check out the group's headquarters at <http://www.500kc.com>. December is the prime time for getting involved. Some very incredible activity has already occurred, including the reception of beacons across oceans. Don't miss out!

## December Propagation

A moderate to low level of solar activity is expected during December, with 10.7-cm flux levels peaking around 70, at most, dipping down to 60 (not too bad, considering we're at the very end of Cycle 23). The density of ionization in the Northern Hemisphere is expected to increase more rapidly after sunrise than during other seasons. Static and atmospheric noise levels will be at seasonally low values during the month. Reasonably strong signal levels are expected on most of the open bands, while the higher bands will not be as hot as they were during the peak years.

Continue to expect fair daytime openings on 15 meters primarily on north/south paths. Openings will be shorter than the same time last year due to the lower solar activity.

Fairly good DX openings are also expected on 17 meters, remaining open toward the west during the early evening. However, 20 meters will be the hottest of all the daytime bands, starting with early morning openings in all directions until about an hour or two after sunrise, and then remaining open to one place or another through the day until early evening. Thirty meters will be a strong player for DX, following the pattern of 20 meters. When conditions are Above Normal, 30, 20, and 17 meters are likely to remain open toward the south and west from early evening until about midnight, mostly for DXers in the lower latitudes nearer the equator.

\*P.O. Box 213, Brinnon, WA 98320-0213  
e-mail: [cq-prop-man@hfradio.org](mailto:cq-prop-man@hfradio.org)

## LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for December 2006

Propagation Index.....	Expected Signal Quality			
	(4)	(3)	(2)	(1)
Above Normal: 1-7, 11-14, 16-20, 23-31	A	A	B	C
High Normal: 8, 10, 21	A	B	C	C-D
Low Normal: 9, 15, 22	B	C-B	C-D	D-E
Below Normal: N/A	C	C-D	D-E	E
Disturbed: N/A	C-D	D	E	E

Where expected signal quality is:

- A—Excellent opening, exceptionally strong, steady signals greater than S9.
- B—Good opening, moderately strong signals varying between S6 and S9, with little fading or noise.
- C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.
- D—Poor opening, with weak signals varying between S1 and S3, with considerable fading and noise.
- E—No opening expected.

## HOW TO USE THIS FORECAST

1. Find the *propagation index* associated with the particular path opening from the Propagation Charts appearing on the following pages.
2. With the *propagation index*, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of 2 will be good (B) on Dec. 1st through the 7th, fair (C) on the 8th and again on the 10th, then good (B) from the 11th through the 14th, etc.

On 40 meters, regional daytime openings will remain strong for most of the day, while great DX will open early in the afternoon. From midnight to sunrise, 40 meters promises some of the hottest nighttime DX during December. The first DX openings should be toward Europe and the east during the late afternoon, and then move across the south through the hours of darkness, while remaining open to most parts of the world. Just after sunrise, openings will be more in a westerly direction. Low seasonal noise will make DXing a pleasurable endeavor.

DX openings on 160 and 80 meters during the hours of darkness and into the sunrise period, with considerably decreased static levels, are a sure bet during the longer hours of darkness in the northern latitudes. Look for openings toward Europe and

### Flash!

## CQ WW CW Contest Forecast Looks Challenging

Poor to Fair Conditions Expected

Since this issue should reach most subscribers before the 2006 CQ WW DX CW Contest begins, here's a quick update for the CW contest weekend, which starts at 0000 UTC, Saturday, November 25 and continues until 2400 UTC, Sunday, November 28. It still looks like varying conditions are expected for the contest weekend. As forecast previously, look for Poor conditions for the first contest day and Fair conditions for the second. The daily 10.7-cm solar-flux level is expected to be 72 for both days. The geomagnetic planetary A-index is expected to be about 8 during the CW contest. You can also see an up-to-the-day "Last-Minute Forecast" on my propagation resource center at <http://prop.hfradio.org>.

**HOW TO USE THE DX PROPAGATION CHARTS**

1. Use chart appropriate to your transmitter location. The Eastern USA Chart can be used in the 1, 2, 3, 4, 8, KP4, KG4, and KV4 areas in the USA and adjacent call areas in Canada; the Central USA Chart in the 5, 9, and 0 areas; the Western USA Chart in the 6 and 7 areas; and with somewhat less accuracy in the KH6 and KL7 areas.

2. The predicted times of openings are found under the appropriate meter band column (10 through 80 meters) for a particular DX region, as shown in the left-hand column of the charts. An \* indicates the best time to listen for 160 meter openings.

3. The propagation index is the number that appears in ( ) after the time of each predicted opening. The index indicates the number of days during the month on which the opening is expected to take place as follows:

- (4) Opening should occur on more than 22 days
- (3) Opening should occur between 14 and 22 days
- (2) Opening should occur between 7 and 13 days
- (1) Opening should occur on less than 7 days

Refer to the "Last Minute Forecast" at the beginning of this column for the actual dates on which an opening with a specific propagation index is likely to occur, and the signal quality that can be expected.

4. Times shown in the charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 A.M.; 13 is 1 P.M., etc. Appropriate daylight time is used, not GMT. To convert to GMT, add to the times shown in the appropriate chart 7 hours in PDT Zone, 6 hours in MDT Zone, 5 hours in CDT Zone, and 4 hours in EDT Zone. For example, 14 hours in Washington, D.C. is 18 GMT. When it is 20 hours in Los Angeles, it is 03 GMT, etc.

5. The charts are based upon a transmitted power of 250 watts CW, or 1 kw, PEP on sideband, into a dipole antenna a quarter-wavelength above ground on 160 and 80 meters, and a half-wavelength above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 dB gain above these reference levels, the propagation index will increase by one level; for each 10 dB loss, it will lower by one level.

6. Propagation data contained in the charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the U.S. Dept of Commerce, Boulder, Colorado 80302.

Far East	16-18 (1)	06-07 (1)	05-08 (1)	05-08 (1)	09-11 (1)	07-08 (1)	06-07 (1)
		07-09 (2)	17-18 (1)	17-18 (1)	15-17 (1)		04-06 (1)*
		09-11 (1)			17-19 (2)		
		15-17 (1)			19-20 (1)		
		17-19 (2)					
		19-21 (1)					
South Pacific & New Zealand	13-15 (1)**	05-07 (1)	01-02 (1)	04-05 (1)			
	12-14 (1)	07-10 (2)	02-04 (2)	05-07 (2)			
	14-17 (2)	10-18 (1)	04-07 (3)	07-08 (1)			
	17-18 (1)	18-20 (2)	07-08 (2)	04-07 (1)*			
		20-22 (1)	08-09 (1)				
Australia	14-16 (1)**	06-07 (1)	03-05 (1)	05-06 (1)			
	12-15 (1)	07-10 (2)	05-08 (2)	06-07 (2)			
	15-17 (2)	10-12 (1)	08-09 (1)	07-08 (1)			
	17-18 (1)	15-16 (1)	17-19 (1)	17-18 (1)			
		16-19 (2)		05-07 (1)*			
		19-21 (1)					
Caribbean	10-15 (1)**	06-07 (1)	17-18 (1)	18-20 (1)			
	08-09 (1)	07-08 (3)	18-19 (2)	20-21 (2)			
Central America & Northern Countries of South America	09-12 (2)	08-09 (4)	19-21 (3)	21-04 (3)			
	12-16 (3)	09-11 (3)	21-03 (2)	04-06 (2)			
	16-17 (2)	11-15 (2)	03-06 (3)	06-07 (1)			
	17-18 (1)	15-17 (3)	06-07 (2)	21-03 (1)*			
		17-18 (4)	07-08 (1)	03-05 (2)*			
		18-19 (2)		05-06 (1)*			
		19-20 (1)					
		01-03 (1)					
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina and Uruguay	11-15 (1)**	06-07 (1)	19-21 (1)	21-03 (1)			
	08-09 (1)	07-09 (2)	21-02 (2)	03-05 (2)			
	09-11 (2)	09-10 (1)	02-05 (1)	05-06 (1)			
	11-13 (1)	12-14 (1)	05-06 (2)	03-05 (1)*			
	13-14 (2)	14-15 (2)	06-07 (1)				
	14-15 (3)	15-16 (3)					
	15-16 (2)	16-17 (4)					
	16-17 (1)	17-18 (3)					
		18-19 (2)					
		19-20 (1)					
		22-00 (1)					
McMurdo Sound, Antarctica	15-17 (1)	07-09 (1)	22-00 (1)	Nil			
		17-18 (1)	00-02 (2)				
		18-20 (2)	02-06 (1)				
		20-22 (1)					
		22-00 (2)					
		00-02 (1)					

South Pacific & New Zealand	12-16 (1)**	06-07 (1)	23-01 (1)	00-01 (1)
	11-13 (1)	07-11 (2)	01-02 (2)	01-06 (2)
	13-15 (2)	11-16 (1)	02-06 (3)	06-08 (1)
	15-17 (3)	16-17 (2)	06-07 (2)	03-07 (1)
	17-18 (2)	17-19 (3)	07-09 (1)	
	18-19 (1)	19-20 (2)		
		20-21 (1)		
Australia	14-17 (1)**	07-08 (1)	01-03 (1)	03-05 (1)
	11-15 (1)	08-11 (2)	03-07 (3)	05-07 (2)
	15-17 (2)	11-18 (1)	07-08 (2)	07-08 (1)
	17-18 (1)	18-20 (2)	08-09 (1)	04-07 (1)*
		20-21 (1)		
Caribbean	10-15 (1)**	06-07 (1)	18-20 (1)	19-21 (1)
	08-09 (1)	07-10 (3)	20-22 (2)	21-05 (2)
Central America and Northern Countries of South America	09-10 (2)	10-14 (2)	22-00 (3)	05-06 (1)
	10-13 (3)	14-16 (3)	00-04 (2)	23-05 (1)*
	13-15 (4)	16-17 (4)	04-06 (3)	
	15-16 (3)	17-18 (3)	06-07 (1)	
	16-17 (1)	18-19 (2)		
		19-21 (1)		
		23-01 (1)		
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina and Uruguay	11-15 (1)*	06-07 (1)	19-21 (1)	21-05 (1)
	08-09 (1)	07-09 (2)	21-02 (2)	00-04 (1)*
	09-11 (2)	09-13 (1)	02-04 (1)	
	11-13 (1)	13-14 (2)	04-06 (2)	
	13-14 (2)	14-15 (3)	06-07 (1)	
	14-15 (3)	15-17 (4)		
	15-16 (2)	17-18 (3)		
	16-17 (1)	18-19 (2)		
		19-20 (1)		
		22-00 (1)		
McMurdo Sound, Antarctica	15-17 (1)	07-08 (1)	22-00 (1)	Nil
		08-09 (2)	00-02 (2)	
		09-11 (1)	02-06 (1)	
		17-18 (1)		
		18-20 (2)		
		20-22 (1)		
		22-00 (2)		
		00-01 (1)		

**December 15, 2006-February 15, 2007  
Time Zone: EST (24-Hour Time)  
EASTERN USA TO:**

	15 Meters	20 Meters	40 Meters	80 Meters
Western & Central Europe & North Africa	09-11 (1)**	06-07 (1)	15-16 (1)	17-19 (1)
	08-09 (1)	07-08 (2)	16-17 (2)	19-20 (2)
	09-11 (2)	08-10 (3)	17-19 (3)	20-02 (3)
	11-12 (1)	10-12 (4)	19-01 (2)	02-03 (2)
		12-13 (3)	01-03 (3)	03-04 (1)
		13-14 (2)	03-04 (2)	20-00 (1)*
		14-15 (1)	04-05 (1)	00-02 (2)*
				02-03 (1)*
Northern Europe & CIS (former USSR)	08-10 (1)	06-07 (1)	15-17 (1)	17-19 (1)
		07-11 (2)	17-19 (2)	19-01 (2)
		11-12 (1)	19-01 (1)	01-03 (1)
			01-02 (2)	21-00 (1)*
			02-03 (1)	
Eastern Mediterranean & Middle East	08-09 (1)	07-08 (1)	17-19 (1)	18-20 (1)
	09-10 (2)	08-10 (2)	19-21 (2)	20-22 (2)
	10-11 (1)	10-12 (3)	21-00 (1)	22-00 (1)
		12-14 (2)	00-01 (2)	20-22 (1)*
		14-15 (1)	01-02 (1)	
Western Africa	10-12 (1)**	06-07 (1)	18-20 (1)	19-22 (1)
	08-09 (1)	07-09 (2)	20-23 (2)	22-01 (2)
	09-11 (2)	09-12 (1)	23-02 (1)	01-03 (1)
		11-13 (3)	12-14 (2)	02-03 (2)
		13-14 (2)	14-16 (3)	03-04 (1)
		14-15 (1)	16-17 (2)	
			17-18 (1)	
Eastern & Central Africa	08-11 (1)	07-13 (1)	18-20 (1)	19-00 (1)
	11-13 (2)	13-16 (2)	20-23 (2)	
	13-14 (1)	16-18 (1)	23-01 (1)	
Southern Africa	10-13 (1)**	07-09 (1)	18-20 (1)	19-22 (1)
	08-09 (1)	12-14 (1)	20-22 (1)	
		11-13 (3)	15-16 (3)	22-00 (1)
		13-14 (2)	16-17 (2)	
		14-15 (1)	17-19 (1)	
Central & South Asia	16-18 (1)	07-10 (1)	06-08 (1)	06-07 (1)
		19-21 (1)	18-22 (1)	18-20 (1)
South-east Asia	16-18 (1)	07-10 (1)	06-08 (1)	06-07 (1)
		17-20 (1)	18-21 (1)	18-20 (1)

**Time Zones: CST & MST (24-Hour Time)  
CENTRAL USA TO:**

	15 Meters	20 Meters	40 Meters	80 Meters
Western & Southern Europe & North Africa	09-11 (1)	06-08 (1)	15-17 (1)	17-19 (1)
		08-10 (2)	17-19 (2)	19-00 (2)
		10-12 (3)	19-12 (3)	00-01 (1)
		12-13 (2)	23-01 (2)	20-01 (1)*
		13-15 (1)	01-02 (1)	
Northern Europe & CIS (former USSR)	08-11 (1)	07-08 (1)	16-18 (1)	18-00 (1)
		08-11 (2)	18-19 (2)	20-00 (1)*
		11-12 (1)	19-22 (1)	
			22-00 (2)	
			00-01 (1)	
Eastern Mediterranean & Middle East	08-11 (1)	07-09 (1)	17-19 (1)	19-22 (1)
		09-12 (2)	19-22 (2)	
		12-14 (1)	22-23 (1)	
		22-00 (1)		
Western Africa	09-12 (1)**	06-07 (1)	17-20 (1)	19-22 (1)
	08-09 (1)	07-09 (2)	20-23 (2)	22-23 (2)
	09-11 (2)	09-11 (1)	23-01 (1)	23-00 (1)
		11-13 (3)	11-13 (2)	21-23 (1)*
		13-14 (2)	13-15 (3)	
		14-15 (1)	15-16 (2)	
			16-18 (1)	
Eastern & Central Africa	09-12 (1)	07-12 (1)	18-19 (1)	19-22 (1)
		12-14 (2)	19-21 (2)	
		14-16 (3)	21-23 (1)	
		16-17 (1)		
Southern Africa	10-12 (1)**	07-13 (1)	18-19 (1)	19-22 (1)
	08-10 (1)	13-15 (2)	19-21 (2)	
	10-13 (2)	15-16 (3)	21-23 (1)	
		13-14 (1)	16-17 (2)	
			17-18 (1)	
			22-00 (1)	
Central & South Asia	17-19 (1)	07-10 (1)	06-08 (1)	06-07 (1)
		19-21 (1)	18-21 (1)	18-20 (1)
South-east Asia	17-19 (1)	06-07 (1)	06-08 (1)	06-07 (1)
		07-09 (2)	17-19 (1)	17-19 (1)
		09-12 (1)		
		17-20 (1)		
Far East	17-19 (1)	06-07 (1)	01-03 (1)	02-04 (1)
		07-09 (2)	03-07 (2)	04-06 (2)

**Time Zone: PST (24-Hour Time)  
WESTERN USA TO:**

	15 Meters	20 Meters	40 Meters	80 Meters
Western & Southern Europe & North Africa	08-10 (1)	06-07 (1)	17-21 (1)	18-20 (1)
		07-11 (2)	21-23 (2)	20-22 (2)
		11-13 (1)	23-01 (1)	22-23 (1)
		23-01 (1)		19-22 (1)*
Northern Europe & CIS (former USSR)	08-10 (1)	06-07 (1)	17-00 (1)	19-22 (1)
		07-10 (2)		19-21 (1)*
		10-12 (1)		
		23-01 (1)		
Eastern Mediterranean & Middle East	08-10 (1)	07-10 (1)	06-08 (1)	06-08 (1)
		10-12 (2)	18-22 (2)	18-21 (1)
		12-13 (1)		
		21-23 (1)		
Western Africa	09-11 (1)**	07-10 (1)	18-23 (1)	19-22 (1)
	08-09 (1)	10-13 (2)		
	09-12 (2)	13-16 (3)		
		12-13 (1)		
		16-17 (2)		
		17-18 (1)		
Eastern & Central Africa	09-11 (1)	08-10 (1)	06-08 (1)	06-08 (1)
		13-16 (1)	18-22 (1)	18-21 (1)
		21-23 (1)		
Southern Africa	08-10 (1)	09-13 (1)	18-21 (1)	18-20 (1)
	10-12 (2)	13-16 (2)		
		12-14 (1)	16-18 (1)	
			23-01 (1)	

& New Zealand	13-14 (2) 14-16 (3) 16-18 (2) 18-19 (1)	13-15 (1) 15-16 (2) 16-18 (4) 18-19 (2) 19-21 (1)	00-07 (3) 07-08 (2) 08-09 (1)	06-08 (1) 03-06 (1)*
Australasia	14-16 (1)** 12-13 (1) 13-15 (2) 15-17 (3) 17-18 (1)	07-08 (1) 08-11 (2) 11-17 (1) 17-18 (2) 18-19 (3) 19-20 (2) 20-21 (1)	01-03 (1) 03-05 (2) 05-07 (3) 07-08 (2) 08-09 (1)	03-05 (1) 05-06 (2) 06-08 (1) 04-07 (1)*
Caribbean, Central America and Northern Countries of South America	11-14 (1)** 08-09 (1) 09-10 (2) 10-12 (3) 12-14 (4) 14-15 (3) 15-16 (2) 16-17 (1)	06-07 (1) 07-09 (3) 09-13 (2) 13-15 (3) 15-16 (4) 16-17 (3) 17-18 (2) 18-00 (1) 00-02 (2) 02-03 (1)	18-20 (1) 20-21 (2) 21-23 (3) 23-01 (2) 01-03 (3) 03-04 (2) 04-05 (1)	19-21 (1) 21-03 (2) 03-04 (1) 21-03 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina and Uruguay	11-14 (1)** 08-10 (1) 10-12 (2) 12-14 (3) 14-15 (2) 15-16 (1)	06-07 (1) 07-09 (2) 09-13 (1) 13-15 (2) 15-16 (3) 16-17 (4) 17-18 (2) 18-21 (1)	19-21 (1) 21-00 (2) 00-02 (1) 02-04 (2) 04-06 (1)	22-05 (1) 00-04 (1)*
McMurdo	14-16 (1) 08-09 (2) 09-11 (1) 15-17 (1) 17-19 (2) 19-21 (1) 21-23 (2) 23-01 (1)	07-08 (1) 00-02 (2)	21-00 (1)	Nil Sound, Antarctica

\* Indicates best time for 160 meter openings.

\*\* Indicates best time for 10 meter openings.

For 12 meter openings interpolate between 10 and 15 meter openings.

For 17 meter openings interpolate between 15 and 20 meter openings.

For 30 meter openings interpolate between 40 and 20 meter openings.

Propagation charts prepared by George Jacobs, W3ASK.

the south from the eastern half of the United States and toward the south, the Far East, Australasia, and the South Pacific from the western half of the country. Eighty meters becomes a reliable long-distance band throughout the entire period of darkness during December. Openings on 80 should peak toward Europe and in a generally easterly direction around midnight, and then open in a generally western direction with a peak just after sunrise. The band should remain open toward the south throughout most of the night.

For short-skip openings during December, try 80 and 40 meters during the day for paths less than 250 miles, and 80 and 160 meters at night for these distances. For openings between 250 and 750 miles, try 40 meters during the day, and both 80 and 160 at night. For distances between 750 and 1300 miles, 20 and 30 meters should provide daytime

openings, while 40 and 80 will be open for these distances from sunset to midnight. After midnight, 80 meters will remain open out to 1300 miles until sunrise. Try 30 and 40 meters again for about an hour or so after sunrise. For openings between 1300 and 2300 miles, openings will occur during the daylight hours on 20 and 17 meters, and to a somewhat lesser degree on 15 meters. During sundown to midnight, check 20, 30, and 40 meters for these long-distance openings, and then check 40 and 80 meters after midnight until sunrise. Try 40 meters again for an hour or so after sunrise.

### VHF Conditions

While there might be an occasional geomagnetic disturbance due to coronal-hole activity, aurora will most likely not occur this month. However, look for some decent meteor-shower activity this month, providing conditions for meteor-scatter openings on the VHF bands for distances up to about 1000 miles.

Meteor-scatter propagation is a mode in which radio signals are refracted off the ionized plasma trails left by dust and small particles that have entered into our atmosphere at thousands of miles per hour.

A great introduction by Shelby Ennis, W8WN, on working high-speed CW meteor scatter is found at <[http://www.amt.org/Meteor\\_Scatter/shelbys\\_welcome.htm](http://www.amt.org/Meteor_Scatter/shelbys_welcome.htm)>. Links to various groups, resources, and software are found at <[http://www.amt.org/Meteor\\_Scatter/default.htm](http://www.amt.org/Meteor_Scatter/default.htm)>.

The annual *Geminids* meteor shower will peak on the night of December 14, at 1045 UTC. This is one of the better showers, since as many as 120 visual meteors per hour may occur. This is a great shower for those trying the meteor-scatter mode of propagation, since one doesn't have to wait until after midnight to catch this shower. The radiant rises early, but the best viewing and operating time will be after midnight local time. This shower also boasts a broad maximum, lasting nearly one whole day, so no matter where you live, you stand a decent chance of catching sight of some *Geminids*.

There is considerably less likelihood of 6-meter trans-equatorial (TE) openings

during December, but look for a possible opening between the southern states and locations deep in South America. The best time to look for these openings is between about 8 and 11 PM local time.

Check out <<http://www.imo.net/calendar/>> for a complete calendar of meteor showers in 2006.

### Current Solar Cycle Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for September 2006 is 14.5, a bit up from the 12.9 of August. The lowest daily sunspot value recorded was zero (0), on September 3 and 4. The highest daily sunspot count was 30 on both September 9 and 10. The 12-month running smoothed sunspot number centered on March 2006 is 17.4. A smoothed sunspot count of 8, give or take about 8 points lower to 12 points higher, is expected for December 2006.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 77.8 for September 2006. The 12-month smoothed 10.7-cm flux centered on March 2006 is 81.6. The predicted smoothed 10.7-cm solar flux for December 2006 is 72, give or take about 14 points.

The observed monthly mean planetary A-index ( $A_p$ ) for September 2006 is 8. The 12-month smoothed  $A_p$ -index centered on March 2006 is 8.4. Expect the overall geomagnetic activity to vary greatly between quiet to active during most days in December. Refer to the "Last-Minute Forecast" at the beginning of this column for the outlook on conditions during December.

I invite you to visit my online propagation resource at <<http://propagation.hfradio.org/>>, where you can get the latest space data, forecasts, and more, all in an organized manner. If you have a cell phone with internet capabilities, try <<http://wap.hfradio.org/>>.

Drop me an e-mail or send me a letter if you have questions or topics you would like to see me explore in this column. I'd also love to hear any feedback you might have on what I have written. Until next month . . .

73, de Tomas, NW7US

Corrected Figure 3, October 2006 Column																		
Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	AVG
W to E Sig.	28	31	33	34	36	37	40	42	40	39	43	39	31	23	6	-5	-18	—
E to W Sig.	27	30	33	34	36	37	40	42	43	42	42	39	31	24	6	-4	-17	—
Difference	-1	-1	0	0	0	0	0	0	3	3	-1	0	0	1	0	1	1	-0.4

Fig. 3— Reciprocal 40-meter signal strengths for W-E and E-W paths.

Number groups after calls denote score, total QSOs, W/VE multiplier, countries worked. Total multiplier is the addition of the W/VE and countries. Multi-op scores follow single-op listings. An asterisk (\*) denotes low power. State, province, and country certificate winners are listed in bold.

**2006 CW RESULTS  
SINGLE OPERATOR  
NORTH AMERICA  
UNITED STATES  
CONNECTICUT**

K1VW	299,460	767	58	60
N1ZZ	189,129	796	59	37
K1PX*	161,109	815	57	24
N4XR	119,605	412	55	40
K1KJ	94,942	386	49	25
W2JU*	68,530	390	54	16
K1BV	59,580	413	51	9
K1IM	57,392	323	52	16
W1QK	51,362	316	45	16
W1CTN*	36,594	255	47	10
W1JQ*	22,586	208	43	3
K1BTD*	4,075	74	25	0

**MASSACHUSETTS**

W1TD	150,840	523	54	36
K1EP*	131,040	659	56	22
N1PGA*	23,310	222	41	4
N3KCJ	21,824	198	37	7
W1TW/GRP	15,252	147	34	7
W6ZF	10,045	120	34	1
KV1J*	4,175	67	24	1
WG1Z/GRP	1,513	34	16	1

**MAINE**

K8PO	335,816	1042	59	45
N1CGP	62,055	395	51	12
NT1N	28,158	168	42	15
N1LW*	9,210	128	29	1
W1CEK/GRP	4,800	62	30	2

**NEW HAMPSHIRE**

W1ECT	334,110	939	57	48
W1LNP*	156,024	659	58	30
W1LJD*	51,648	310	52	12
WB1ED1*	50,505	313	54	11
AA1CA/GRP	26,166	270	38	4
K1NSS*	20,631	227	37	2
AE1D*	3,820	82	20	0
N1IW	3,568	101	16	0

**RHODE ISLAND**

K3IU*	7,946	113	28	1
-------	-------	-----	----	---

**VERMONT**

W1ECH*	29,160	195	53	7
K1KD	7,986	95	30	3

**NEW JERSEY**

N2NT	512,533	1118	60	59
N2ED	219,675	707	58	43
N2MM	216,645	704	57	44
N2BA*	188,005	750	58	37
K1JT*	98,198	536	55	19
N2NG*	82,140	432	56	18
WB2AA*	58,255	400	51	10
W2VI*	49,270	297	51	14
W2LE	39,540	256	48	12
WR2G	27,264	215	38	10
K2YLH*	23,310	241	38	4
N2VW	19,110	202	40	2
KD2MX/GRP	18,915	211	39	0
W2KP	15,750	134	38	7
K2OWE*	15,414	164	40	2
N2KP8	13,611	145	35	4
N2NF*	10,633	152	31	0
W2JEK/GRP	8,070	115	29	1
K2PS*	7,030	76	35	2
N2CO*	6,328	98	28	0
W2OB*	4,325	77	25	0
WA2RY/GRP	2,877	58	20	1
K2RET*	1,980	45	20	0

**NEW YORK**

WF2W	374,736	1120	60	51
W2RU	341,670	1010	59	46
N2CU	335,938	1012	58	51
W2XL	301,455	917	59	46
W2ID	233,478	747	59	43
K2YR	203,044	703	58	34
K2FU	197,800	815	59	33
WB2ABD	141,094	491	57	37
W2GDJ	140,531	478	56	33
K2TA	124,268	364	54	40
K2XA	114,023	357	52	39
K2UG	104,995	487	57	26
K2SX	100,320	479	56	24
NT2A*	89,460	534	59	12
K2UF*	89,170	463	52	22
K2NV	78,150	359	52	23
W2RR*	73,778	400	56	18
A2N*	58,245	470	51	4
WA2MCR*	37,980	247	49	11
W2NRA*	34,944	264	50	6
NA2M	32,568	224	48	11
N2LL*	28,548	223	44	8
K2ONP	25,596	188	48	6
N2MRI*	23,005	232	40	3
K2CS*	14,564	128	39	5
N2EK*	11,259	186	27	0
K2TV*	10,857	142	32	1
KV2X*	6,588	104	27	0
WB2AJV*	3,312	66	23	0
WB2TPS*	2,596	50	22	0

**DISTRICT OF COLUMBIA**

K3VOA*	13,061	150	35	2
--------	--------	-----	----	---

**DELAWARE**

AA1K	553,707	1287	59	60
K3MQ*	60,237	338	53	16
N8NA*	51,030	297	48	15
W3PP	22,736	144	44	12

**MARYLAND**

KD4D	484,205	1179	60	53
K3ZU	266,976	694	58	50
N3UM	171,325	646	55	34
K2PLF	159,978	604	56	35

W3DO	122,470	695	58	16
W3SO	115,577	603	56	21
WX3B	115,292	505	56	26
W9GE	104,220	301	50	40
N3HUV	94,430	572	52	18
N3OC	85,470	443	51	23
W6AAN	83,835	353	53	28
K3MM	81,700	403	53	23
NS3T*	67,478	445	55	10
K3STX*	60,522	366	53	13
K3WI	49,661	411	47	6
N3ND	39,296	219	47	17
WSNRJ*	31,407	221	48	9
K3TW/GRP	20,124	207	41	2
W3DAD	15,252	151	37	4
N3XL*	11,550	144	33	2

**PENNSYLVANIA**

WE3C	474,150	1192	58	51
W3TDF*	273,141	891	57	42
W3GH	272,646	906	58	44
W3TS	265,004	946	58	39
N3GJ*	63,444	367	53	15
K4JLD	54,094	261	53	21

**GEORGIA**

NO4I	458,469	1155	58	63
K4EA	309,986	794	59	59
KU8E	233,600	863	59	41
W4ATT	231,504	588	58	54
NE4S*	134,240	688	57	23
N4NX*	121,923	472	58	35

**KENTUCKY**

AA4CF	77,234	415	55	18
W4OWY*	68,693	367	53	20
W5JR	51,168	178	49	29
AA4LR*	30,362	298	44	3
W4ATL	9,460	94	43	1
W4QQ/GRP	2,952	60	24	0

**NORTH CAROLINA**

W4ZV	617,463	1309	59	62
NA4F	444,280	950	58	58
N4XD	325,208	843	60	46
K8AC	289,800	906	58	47
W440U*	107,760	529	57	23
K4DJ*	66,820	447	55	10
AA4VV	58,480	190	47	33
W4TMR/GRP	52,762	379	55	7
K4CEB*	46,748	295	50	12
WB4MSG*	28,416	269	47	1
K2AV	25,438	247	43	3
K2ZJ*	16,014	129	45	6
N4UJ	13,520	144	36	4
NX9T*	11,550	150	34	1
KA1ARB*	7,308	117	28	0
AE4EC*	2,240	53	20	0
N4HXI*	1,638	44	18	0

**ALABAMA**

K4SAV	126,400	621	56	24
KA9EKJ*	114,750	640	57	18
WA1FCN*	66,598	419	55	12
W4NTI	53,070	385	53	8
K4IQJ*	52,633	263	54	19
W4RYW	44,850	248	53	16
K4HAL*	44,520	355	51	5
K4ZGB	43,010	351	48	7

**FLORIDA**

K9OM	262,332	676	57	51
W4AA*	159,612	583	57	37
WJ9B*	150,423	631	55	36

**SOUTH CAROLINA**

AF4OX	255,102	921	59	43
AA4NN*	128,553	743	57	16
K4QO*	57,672	301	51	21
N2FY	49,558	258	53	18
K4DLJ*	48,360	309	51	14
KR4M	38,144	223	52	12
W4IT*	26,352	191	45	9

**TENNESSEE**

K1GU	236,072	984	60	32
N4IR	198,730	934	57	28
N2WN*	147,657	716	58	25
N4DW	125,280	514	56	31
AD4EB	124,085	592	56	27
NA4Z	80,581	598	53	8
NA4K	78,260	517	55	10
W200	61,983	339	54	17
W4DAN*	61,488	450	52	9
K4LTA	59,856	464	54	4
W6UB/GRP	32,350	288	49	1
K4KO*	30,396	261	47	4
W4NZ	23,712	197	45	7
WA4GLH	16,954	151	47	2

**MISSISSIPPI**

W5UL	138,000	843	56	13
N5UL	98,853	436	56	27
W6TER*	41,220	279	50	10
K7IA*	18,048	171	46	1
KD5JAA	8,399	103	36	1

**OKLAHOMA**

K5CM	111,625	376	56	39
K5TT*	64,832	425	54	10
K2BA	47,127	248	52	17
K5KA	33,184	209	46	15
W5SX	1,260	30	20	0

**TEXAS**

K5BG	359,306	1056	60	47
K5RX	320,251	953	59	48
NSPO	132,678	671	57	24
W5FO*	106,829	573	58	19
W5UO*	104,098	619	58	15
W5YFG	103,200	422	55	31
K5NZ	78,662	426	55	19
W5VX*	55,986	396	54	8
W5OV*	27,030	223	47	6
K5WX/GRP	12,096	128	40	2
K2SJ*	3,741	57	28	1
K5K*	2,160	42	24	0
W5QLF*	234	13	9	0

**CALIFORNIA**

W4EF	240,000	915	59	21
AC6DD	223,725	801	57	18
K6NR	167,610	705	57	17
KB7Q*	117,786	682	56	11
K6SE	89,110	432	53	14
N6RO	87,680	453	55	9
W6JTI*	75,966	456	55	11
K6NA	65,824	359	53	15
NT6K*	60,445	455	51	4
W6OSP	59,880	377	49	11
N6KI	54,808	375	55	7
K6XX	53,142	325	45	6
W6YK	50,160	323	51	6
W6FA	44,004	297	48	9
N6ZFO*	43,483	289	51	8
W7DR	41,760	278	47	11
N6BV*	37,044	294	47	7
N6AA*	35,784	249	48	8
N6HY	35,400	204	46	13
W4UAT	34,375	249	48	7
K6NY	32,118	258	47	6
K6YK	28,090	221	47	6
N6TV	27,783	227	43	6
W6RKC	27,454	204	47	6
K6LRN	26,460	215	45	4
K16CK	22,949	173	48	5
N6WG/GRP	20,720	208	36	4
KE6QR	20,196	243	33	3
K6RIM	18,705	167	37	6
W6HG	16,968	182	40	2
N6NF*	13,734	137	40	2
W6SJ*	13,716	160	33	3
K6ET	13,104	102	43	5
AD6WL	10,640	100	33	5
AD6FR*	9,656	115	31	3
KK6F*	9,579	123	28	3
AD6ZJ*	8,917	95	34	3
WA6ROB	8,712	98	34	2
KH6DX/M	8,217	45	15	18
WB6SO	8,151	99	29	4
K6TA	7,458	77	26	7









VE6EQ/GRP VE6JY	ALBERTA 25,536 141 37 1 5,373 41 27 0	DL6RBH* DJ9MH* DL1HSR DM2BPG* DK6CQ* DK2ZJ* DL7UMK/GRP DK1FW* DL8NBJ* DK7FP* DL8AKA* DF3IS* DM9CM* DL2KUF* DL3DRN* DL7UAI* DG6DAG* DL20BO DK7MCK* DL3LAB DL4RCK* DL0ER* DB4SP* DL2VSF* DJ6TK/GRP DF2FM* DL1AQU/P/GRP DL7BA*	14,336 126 0 28 13,752 140 0 24 13,025 139 0 25 12,376 98 0 28 12,285 106 0 27 11,940 89 0 30 11,400 105 0 25 10,200 92 0 25 10,192 79 0 26 9,776 83 0 26 9,177 109 0 21 8,650 82 0 25 7,964 85 0 22 7,450 68 0 25 7,153 69 0 23 6,575 64 0 25 4,374 57 0 18 4,320 49 0 20 3,960 50 0 18 3,451 52 0 17 2,310 35 0 15 2,112 30 0 16 1,500 31 0 12 1,079 19 0 13 984 20 0 12 924 18 0 11 810 24 0 9 10 2 0 1	GUERNSEY 1,100 20 0 11	HUNGARY HG3M 347,440 795 21 59 HA8BE 107,600 419 5 45 HA6NL* 71,760 309 2 44 HA1CW* 23,018 141 0 34 HA1DAE* 10,368 89 0 24 HA5PT 6,720 69 0 20 HA8FW* 4,360 45 0 20 HA1ZN/GRP 4,335 59 0 15	ER3HW* PABJM PC2T PI4ZJ PA9DD PA3AAV PABLOU PABJNH PE2KP/GRP	MOLDOVA 12,075 104 0 23	NETHERLANDS 57,933 282 0 41 41,748 196 2 40 33,390 192 0 35 17,408 98 3 31 8,502 62 2 24 6,094 56 0 22 5,691 56 0 21 1,612 26 0 13	RUSSIA RU6LA 138,287 442 6 55 RV1CC 50,102 262 0 41 UA4FRL* 34,524 168 0 42 UA3BL* 30,625 192 0 35 RN3ZC 30,514 159 0 38 RN4AA 27,892 147 0 38 UA3DK 27,160 134 0 40 RK6CK* 22,755 128 0 37 UA68DQ* 21,556 136 0 34 RZ3AUL* 17,984 118 0 32 RX6LP/GRP 11,421 86 0 27 RV4LC* 10,348 86 0 26 RX3QDF* 9,750 82 0 26 RA4CX 8,192 47 0 32 RU6FA* 7,878 65 0 26 UA3HL* 7,462 59 0 26 RW3AI/GRP 4,427 49 0 19 UA4LU* 3,762 40 0 19 UA4PN 2,760 33 0 15 RA1QDP* 581 21 0 7 RU1AB 42 4 0 3	Y03CZW* 4,454 52 0 17 Y04AAC/GRP 1,232 23 0 11
HR2DMR* HR1RTF*	HOHDURAS 6,864 53 26 6 364 10 3 4	DL2KUF* DL3DRN* DL7UAI* DG6DAG* DL20BO DK7MCK* DL3LAB DL4RCK* DL0ER* DB4SP* DL2VSF* DJ6TK/GRP DF2FM* DL1AQU/P/GRP DL7BA*	7,450 68 0 25 7,153 69 0 23 6,575 64 0 25 4,374 57 0 18 4,320 49 0 20 3,960 50 0 18 3,451 52 0 17 2,310 35 0 15 2,112 30 0 16 1,500 31 0 12 1,079 19 0 13 984 20 0 12 924 18 0 11 810 24 0 9 10 2 0 1	ITALY IZ4DPV 230,454 755 3 59 IV3IPS 159,999 568 5 52 IV3YIM 117,720 432 10 44 IK4SPB* 39,160 198 3 37 IZ8EDL* 11,816 87 0 28 IV3BKH 7,475 62 1 22 IK8UND* 2,196 26 0 18 IK3ASM* 258 11 0 6	LA6WEA SP3KEY SP5ZIM* SP3GXH* SP5CJY* SP1QY SP6HE* SP4LVK* SQ2EAN* SP2HXV* SP1DMD* SQ4IXM* SP2HPD* SQ5FLP*	NORWAY 37,224 203 0 36	POLAND 280,976 808 11 57 88,322 419 0 43 39,900 237 0 35 21,318 133 0 33 20,064 122 0 33 9,541 63 0 29 9,175 75 0 25 8,556 77 0 23 7,944 70 0 24 7,248 65 0 24 2,805 36 0 17 1,648 23 0 16 1,547 25 0 13	SERBIA YT8A 282,450 691 18 57 YU1EA* 78,288 318 3 45 4HGW* 35,445 189 0 37	ROMANIA 32,376 162 0 38 16,410 108 1 29	SLOVAKIA DM4JD* 26,656 156 0 34 DM7DX/GRP 11,888 93 0 24
WP3C* K8DU/KP4	MEXICO 53,846 258 39 3 1,545 23 13 2 1,212 21 8 4	DL2KUF* DL3DRN* DL7UAI* DG6DAG* DL20BO DK7MCK* DL3LAB DL4RCK* DL0ER* DB4SP* DL2VSF* DJ6TK/GRP DF2FM* DL1AQU/P/GRP DL7BA*	4,320 49 0 20 3,960 50 0 18 3,451 52 0 17 2,310 35 0 15 2,112 30 0 16 1,500 31 0 12 1,079 19 0 13 984 20 0 12 924 18 0 11 810 24 0 9 10 2 0 1	KALININGRAD UA2FW 62,478 311 0 39	LITHUANIA LY2OU 116,242 489 0 46 LY2FN 10,275 83 0 25 LY1R 7,720 79 0 20 LY3BA* 3,056 39 0 16 LY2OM* 2,496 33 0 16 LY3UV* 1,664 28 0 13	Y09HP Y050HZ				
WV4FZ WP2Z	US VIRGIN ISLANDS 299,826 460 56 50 27,716 133 33 8	DL2KUF* DL3DRN* DL7UAI* DG6DAG* DL20BO DK7MCK* DL3LAB DL4RCK* DL0ER* DB4SP* DL2VSF* DJ6TK/GRP DF2FM* DL1AQU/P/GRP DL7BA*	7,450 68 0 25 7,153 69 0 23 6,575 64 0 25 4,374 57 0 18 4,320 49 0 20 3,960 50 0 18 3,451 52 0 17 2,310 35 0 15 2,112 30 0 16 1,500 31 0 12 1,079 19 0 13 984 20 0 12 924 18 0 11 810 24 0 9 10 2 0 1	LY2OU 116,242 489 0 46 LY2FN 10,275 83 0 25 LY1R 7,720 79 0 20 LY3BA* 3,056 39 0 16 LY2OM* 2,496 33 0 16 LY3UV* 1,664 28 0 13						
7XBRY	AFRICA ALGERIA 139,355 298 2 45	SV8CS 159,786 478 9 57 SK3Z 52,528 214 5 44 SV1GRD 24,140 140 0 34 SV1DPP* 14,010 93 0 30								
E8AH E8EW	CANARY ISLANDS 504,450 563 36 54 79,076 150 19 34	GREECE SV8CS 159,786 478 9 57 SK3Z 52,528 214 5 44 SV1GRD 24,140 140 0 34 SV1DPP* 14,010 93 0 30								
U8ACJ UA4LCQ/9*	ASIA ASIATIC RUSSIA 33,760 112 0 32 17,668 67 0 28									
9K2HN	KUWAIT 3,855 25 0 13									
EX8AA*	KYRGYZSTAN 600 12 0 6									
AP2IA*	PAKISTAN 805 13 0 7									
OE9XRV OE1TKW OE1HNB OE6WIG* OE2LCM OE8CCQ*	EUROPE AUSTRIA 177,118 601 8 51 14,518 78 1 33 13,325 107 0 25 12,100 98 0 25 9,800 78 0 25 648 15 0 9									
CU2AF	AZORES 139,159 267 27 40									
EU3AR	BELARUS 82,890 322 0 38									
ON7EQ ON8DB*	BELGIUM 92,565 410 1 44 2,512 32 0 16									
LZ2DF LZ2UZ*	BULGARIA 38,924 205 0 37 12,324 92 0 26									
9A6KET* 9A6V* 9A5MT*	CROATIA 46,800 230 1 39 24,310 141 0 34 14,168 100 0 28									
OK1ES OK1TP OK1W OK2SAR* OK2BRA* OK1MKU* OK1AY* OK2PWJ* OK1K2* OK1DVK OK1FIA*	CZECH REPUBLIC 152,220 522 8 51 124,406 494 2 48 117,992 486 7 42 27,590 188 0 31 23,240 180 0 28 20,510 117 2 33 19,845 156 0 27 13,717 102 0 29 12,038 97 0 26 5,022 31 0 31 2,805 36 0 17									
G6M G3VAO* 2EBPLA*	ENGLAND 82,018 361 3 43 81,538 264 11 48 2,226 33 0 14									
ESSRW	ESTONIA 75,936 296 1 47									
TA1CM*	EUROPEAN TURKEY 27,948 157 0 34									
OH2BO	FINLAND 4,992 35 1 25									
F4DSK F5BBD F5VHN* F5CQ*	FRANCE 41,495 180 8 35 31,122 155 6 32 6,302 55 8 23 135 5 0 5									
DL12* DJ6GT DF2UJ DJ8UV* DN2RMC DGSNFF* DL5JS DL6EZ DL4WA* DL5KUT DD5FZ DJ9A* DGBNEL DL8MHW DL3APM* DJ1AA DL3ABL DG2NMF	GERMANY 138,159 484 14 49 127,794 504 10 49 117,260 503 6 49 52,207 365 1 36 48,768 211 12 36 46,410 248 3 42 44,940 261 4 38 40,812 269 0 38 36,408 234 0 37 35,720 209 3 35 33,740 220 1 34 28,305 177 1 36 26,690 187 0 34 21,360 169 0 30 16,368 119 0 31 15,780 130 0 30 14,973 107 0 31 14,670 111 0 30									

## THE NEW HEAVYWEIGHT CHAMP!

Now available

### The Bencher Hex Paddle



See your dealer or contact Bencher

This super-responsive fully iambic paddle is sure to be an instant classic in the Bencher tradition. Features include magnetic paddle return, individual tensioning for dots and dashes, and gold plated solid silver contacts. This is a rugged paddle that will stand up to the most physical of operators, yet offers the featherlight response that lets the CW roll off your fingers. Weight- 3 lbs, 2 ozs. (1.4 kg)  
Price: \$195.00 plus S&H

**BENCHER, INC.**

TEL: 847-838-3195 • www.bencher.com  
241 Depot St., Antioch, IL 60002

## W2IHY Technologies

Outstanding Transmit Audio Is Our Specialty

### 8 Band EQ



W2IHY 8 Band EQ & Noise Gate  
Thousands of Satisfied Users Worldwide

**\$249.99**  
Radio cable \$25.00

Add the legendary W2IHY 8 Band Equalizer And Noise Gate to your shack and get ready for great audio reports! From smooth rag-chew audio that makes them ask what you're running ... to penetrating dx/contest audio that gets results, wide-range adjustability is at your command. Noise Gate reduces background noise for a cleaner, more effective signal. Universal Interface lets you use most any microphone with any radio including classics. I-K-Y selector for plug-n-play with popular brand microphones. Switched outputs for 2 radios. Headphone Monitor. RFI protection.

### EQplus By W2IHY



Premium Audio Processing

Did you turn on an amplifier? Your signal is loud and squeaky-clean. EQplus users hear that report all the time. Compressor/Limiter increases talk power without the distortion and restricted frequency response of ordinary speech processors. Dual Band EQ, Downward Expander for noise reduction, Effects for psychoacoustic magic. LED Bar Graph. Front panel controls. Universal Interface matches most all mics, all radios. I-K-Y mic selector. Switched outputs for 3 radios. Headphone Monitor. RFI protection. Powerful stand alone system or combine with W2IHY 8-Band EQ for maximum adjustability.

**\$339.99**  
Radio cable \$25.00

Products purchased from W2IHY include 30 Day Money Back Guarantee and 3 Year Parts/Labor Warranty. Top-rated Product Quality, Technical Support and Customer Service.

**Awesome Audio Demonstrations**  
www.w2ihy.com

Toll-Free 877-739-2449  
845-889-4253

W2IHY Technologies Inc.

19 Vanessa Lane, Staatsburg, NY 12580

email: julius@w2ihy.com

www.w2ihy.com





Mike, KE7FXF, at the Arizona Multi-Op SSB station NF7E. Mike is the 12-year-old grandson of Bob Wertz, NF7E, and a fourth generation ham in the Wertz family.

OM3TLE*	10,175	82	0	25
OM1AVK*	10,097	89	0	23
OM7YC*	2,660	38	0	14
OM6AL*	5	1	0	1
<b>SLOVENIA</b>				
S57DX	239,470	677	11	59
S59A	196,980	562	16	51
S52CO	137,214	509	4	50
S50D	65,880	334	1	39
S57J	52,611	280	0	39
S520T*	40,584	219	0	38
S590/DRP	25,812	145	0	36
S57YX	25,058	152	1	33
S57Q	10,626	101	0	22
S57NAW*	10,511	98	0	23
S58P/DRP	448	13	0	8
S57S*	140	8	0	5
S57C	68	4	0	4
<b>SPAIN</b>				
EASEG	32,670	127	11	34
EA3CI*	20,100	136	1	29
EA1DVY*	17,136	87	5	31
EA5JK	16,218	94	3	31
EA3AKA*	15,428	109	2	27
EA7ATX	12,927	81	5	26
EA3GHQ	10,475	107	1	24
EA3FF*	9,261	66	1	26
EA2SW*	730	15	0	10
EA7RM*	620	11	0	10
<b>SWEDEN</b>				
SM6U*	16,016	115	0	28
SM5U*	15,407	99	0	31
SM7BJW	2,550	34	0	15
SM2YIP*	500	10	0	10
SAZT*	350	10	0	7
<b>UKRAINE</b>				
UT7DK	117,988	492	5	47
UT3SA	91,744	397	2	45
UT9MZ*	76,956	288	0	53
UY2UQ*	34,706	195	0	37
UR5ZLK	33,969	183	0	39
UT5ECZ	30,562	169	0	37
USSZCW*	20,992	141	0	32
UY0ZG	20,894	140	0	31
US6IOE*	19,158	138	0	31
UT4EK*	13,524	107	0	28
US7IA*	9,875	85	0	25
UV5EEO*	8,775	64	0	27
UR6DS*	6,463	56	0	23
USSLD/DRP	3,942	53	0	18
US6IKF/DRP	3,232	43	0	16
US6IKV*	2,826	34	0	18
UT5UGR	2,855	39	0	15
UU2JQ	2,220	26	0	15
UT2UB	1,365	21	0	13
<b>OCEANIA</b>				
KH7X	69,322	152	39	7
<b>SOUTH AMERICA</b>				
<b>ARUBA</b>				
P48W	363,545	432	48	37
<b>BRAZIL</b>				
PY3CAL*	75	5	0	3
PY3PA*	75	5	0	3
PY3MSS*	60	4	0	3
PY7ZY	24	2	0	2
<b>CHILE</b>				
CE3BFZ	260	12	0	4
<b>PARAGUAY</b>				
ZP9/N38NA*	90	6	0	3
<b>VENEZUELA</b>				
YV2IF	13,392	45	14	17

<b>SSB MULTI-OPERATOR NORTH AMERICA UNITED STATES</b>				
CONNECTION	19,411	181	42	5
<b>NEW HAMPSHIRE</b>				
N11W	24,684	220	35	9
<b>NEW JERSEY</b>				
N2CW	248,216	951	57	35
K2AX	118,230	706	53	17
<b>NEW YORK</b>				
NN2W	74,989	534	48	11
N2BZP	13,325	140	38	3
W2RDX	7,359	92	33	0
<b>DELAWARE</b>				
AA1K	27,300	209	45	7
<b>MARYLAND</b>				
WX3B	77,040	548	50	10
WY3P	44,924	446	40	4
<b>PENNSYLVANIA</b>				
WE3C	253,276	999	58	34
K3WW	118,002	687	52	19
NE3F	66,278	453	51	11
NN3Q	45,429	305	41	16
AA3B	28,845	285	40	5
W8FJ	25,450	196	41	9
K3MD	8,217	101	29	4
<b>ALABAMA</b>				
N4DX	12,915	143	36	5
<b>GEORGIA</b>				
NE4S	63,806	459	51	10
N4GG	896	32	14	0
<b>KENTUCKY</b>				
K4UZ	64,809	530	54	3
<b>NORTH CAROLINA</b>				
N4CW	7,488	135	26	0
K3KO	1,139	29	16	1
<b>SOUTH CAROLINA</b>				
W4UNP	33,872	227	47	11
N4EE	26,864	267	41	5
<b>TENNESSEE</b>				
N4VV	60,268	398	46	15
<b>VIRGINIA</b>				
N4RV	182,567	993	56	21
N4DSL	91,485	724	50	7
K4RG	54,321	396	47	10
N2QT	38,709	340	45	6
WA4BUE	34,496	317	43	6
N4VA	12,650	195	44	6
K1KO	10,260	117	35	3
<b>ARKANSAS</b>				
W05R	145,337	908	58	13
<b>MISSISSIPPI</b>				
W5CR	8,702	97	33	5
<b>TEXAS</b>				
AB5MM	55,384	438	49	7
W5RTA	40,662	337	46	8
W5FRF	1,786	40	17	2
<b>CALIFORNIA</b>				
W6FRH	7,676	82	33	5
K6EI	6,336	89	29	3
W6YRA	2,960	79	15	1
<b>ARIZONA</b>				
N7GP	98,368	665	53	11
N7FE	31,263	270	45	6
N7KQ	15,345	151	41	4
<b>NEVADA</b>				
K6GNX	83,509	568	51	10
<b>WASHINGTON</b>				
N70S	68,382	481	50	8
K7OX	27,888	243	42	6
WA1PMA	23,700	200	44	6
<b>OHIO</b>				
ND8DX	238,791	1177	58	25
K5ZG	204,668	1155	58	18
N8TR	125,925	783	55	14
<b>WEST VIRGINIA</b>				
AJ1M	12,062	145	35	2
<b>ILLINOIS</b>				
N2BJ	84,420	641	57	3
K6GN	3,645	63	26	1
<b>INDIANA</b>				
W9IU	127,140	872	56	9
<b>COLORADO</b>				
WBEEA	14,852	140	44	3
<b>KANSAS</b>				
K8BJ	28,392	214	49	7
<b>MINNESOTA</b>				
NM7X	122,346	873	56	7
W0MR	52,218	433	51	3
<b>MISSOURI</b>				
K8LIR	94,123	694	53	8
<b>SOUTH DAKOTA</b>				
K0BS	32,454	268	51	3
<b>CANADA</b>				
<b>QUEBEC</b>				
VE2UMS	56,908	298	38	3
<b>ONTARIO</b>				
VE3DC	52,118	234	42	4
VA3MAH	47,904	207	44	4
VA3GGF	2,703	33	17	0
<b>BAHAMAS</b>				
C6ANM	392,380	802	56	36
<b>MEXICO</b>				
XE1RCS	287,448	652	54	30
<b>ASIA</b>				
<b>ASIATIC RUSSIA</b>				
RZ9WXX	37,091	136	0	29
RW0MM	448	12	0	4
<b>GEORGIA</b>				
4L8G	451,306	1022	0	46
<b>TURKEY</b>				
YM7M	48,544	156	0	32
<b>EUROPE</b>				
<b>CROATIA</b>				
9A5D	103,297	378	7	46
<b>CZECH REPUBLIC</b>				
OK7M	116,250	478	4	46
OL9R	79,007	398	1	40
OL2U	38,268	225	0	36
OK1KMG	33,250	199	0	35
<b>DENMARK</b>				
OZ1ADL	67,240	328	2	39
OZ3RIN	53,028	297	0	36
OZ0TE	6,935	71	0	19
<b>ENGLAND</b>				
G3UEG	137,664	397	16	48
<b>FINLAND</b>				
OH3BHL	13,068	97	0	27
<b>FRANCE</b>				
TM7Z	309,285	709	22	57
F1UVN	29,526	156	0	38
<b>GERMANY</b>				
DK20Y	148,596	587	8	50
DK0IW	117,250	626	2	48
DR0W	50,396	283	2	41
DL1RG	43,946	222	4	39
DH0GHU	28,322	212	0	34
DR5X	16,744	155	0	26
DK3QJ	13,020	102	1	27
DM5T	3,762	44	0	19
DL1MGB	3,120	32	2	18
DL0EK	847	19	0	11
<b>HUNGARY</b>				
HG8DX	416,584	865	24	62
HG1S	114,750	448	3	47
<b>ITALY</b>				
IZ5EME	73,050	302	4	45
IQ3GO	72,732	402	0	38
IQ7ML	42,744	223	2	37
IQ0S/P	17,429	123	0	29
<b>KALININGRAD</b>				
RK2FWA	369,892	912	16	60
<b>LITHUANIA</b>				
LY7A	178,992	733	0	48
LY7Z	37,116	200	0	36
<b>POLAND</b>				
SN2K	110,160	430	2	49
<b>RUSSIA</b>				
RL3A	57,332	261	0	44
<b>SLOVENIA</b>				
S57M	295,464	717	17	61
S53S	95,893	391	4	45

K6GNX	NEVADA	83,509	568	51	10
N70S	WASHINGTON	68,382	481	50	8
K7OX		27,888	243	42	6
WA1PMA		23,700	200	44	6
ND8DX	OHIO	238,791	1177	58	25
K5ZG		204,668	1155	58	18
N8TR		125,925	783	55	14
AJ1M	WEST VIRGINIA	12,062	145	35	2
N2BJ	ILLINOIS	84,420	641	57	3
K6GN		3,645	63	26	1
W9IU	INDIANA	127,140	872	56	9
WBEEA	COLORADO	14,852	140	44	3
K8BJ	KANSAS	28,392	214	49	7
NM7X	MINNESOTA	122,346	873	56	7
W0MR		52,218	433	51	3
K8LIR	MISSOURI	94,123	694	53	8
K0BS	SOUTH DAKOTA	32,454	268	51	3
VE2UMS	CANADA	56,908	298	38	3
VE3DC	QUEBEC	52,118	234	42	4
VA3MAH		47,904	207	44	4
VA3GGF		2,703	33	17	0
C6ANM	BAHAMAS	392,380	802	56	36
XE1RCS	MEXICO	287,448	652	54	30
RZ9WXX	ASIA	37,091	136	0	29
RW0MM	ASIATIC RUSSIA	448	12	0	4
4L8G	GEORGIA	451,306	1022	0	46
YM7M	TURKEY	48,544	156	0	32
9A5D	EUROPE	103,297	378	7	46
OK7M	CROATIA	116,250	478	4	46
OL9R		79,007	398	1	40
OL2U		38,268	225	0	36
OK1KMG		33,250	199	0	35
OZ1ADL	DENMARK	67,240	328	2	39
OZ3RIN		53,028	297	0	36

# CQ Index 2006

## ANTENNAS

- Antenna Techniques to Up Your Output, West (WB6NOA), Jul., p. 34  
Antennas: 468/Frequency in MHz = Length in Feet: Why? Britain (WA5VJB), Nov., p. 82  
Antennas: Circular Polarization, Britain (WA5VJB), Jul., p. 66  
Antennas: Discover Ham Satellites with a Cheap Yagi, Britain (WA5VJB), Sep., p. 55  
Antennas: Getting Sirius; Buckmaster Off-Center-Fed Dipole, Britain (WA5VJB), Jan., p. 70  
Antennas: High-Impedance Antennas, Tracking Generators, and a Homebrew Portable Mast, Britain (WA5VJB), Mar., p. 64  
Antennas: More Assorted Antenna Topics, Britain (WA5VJB), May, p. 68  
How it Works: Straight Talk on Dipoles and Doublets, Ingram (K4TWJ), Jul., p. 62  
How it Works: Supports for Wire Antennas, Ingram (K4TWJ), Sep., p. 61  
Hustler/Hamstick Combo Antenna, Build a, Paul (W6POK), Jun., p. 46  
Math's Notes: A Simple Antenna for the 2.39–2.45 GHz Amateur Band, Math (WA2NDM), Sep., p. 52  
Math's Notes: An Active Antenna, Math (WA2NDM), Nov., p. 46  
More Cheap Antenna Improv, Ewing (WA8WTE), Oct., p. 34  
Three-Band Field Day Dipole, A, Margot (W6FZA), Jun., p. 38  
World of Ideas: Hamming from the Shadows, Ingram (K4TWJ), Sep., p. 44  
World of Ideas: Hamming from the Shadows, Part 2, Ingram (K4TWJ), Oct., p. 48  
(Yes, You Can) Design and Build Your Own Coax RF Choke and Balun, Smith (KA4LBE), Oct., p. 44

## CLASSIC RADIO GEAR & NOSTALGIA

- Magic in the Sky: Remembering the Pioneers, Reinhardt (AA6JR), Jul., p. 78  
Math's Notes: Reflections, Math (WA2NDM), Dec., p. 26  
Radio Classics: A Visit with WA4KCY, Veras (K9OCO), Mar., p. 74  
Radio Classics: RAL Series Receivers and Boatanchor Car Guys, Veras (K9OCO), Sep., p. 73  
Radio Classics: Seeing Double, Veras (K9OCO), Jun., p. 78  
Radio Classics: Eras of the Golden Age, Veras (K9OCO), Dec., p. 78  
Recollections of a DXer: 50 Years in the Pileups and Still Counting, Richmond (W4YO), Jan., p. 13  
Rescue the Champion: Tips on Repairing/Replacing the Power Supply for the Yaesu FT-736R, Laidman (W8DX), Jun., p. 28  
Revisiting My Roots, Locher (W9KNI), Oct., p. 22  
Rock Star Price Guide, Thurtell (K8PSV), Oct., p. 18  
World of Ideas: More Glowbug Glamour, Ingram (K4TWJ), Nov., p. 48

## COMPUTERS & INTERNET

- Digital Connection: D-Star and Google, Rotolo (N2IRZ), Feb., p. 87  
Digital Connection: On the Air with D-Star, Rotolo (N2IRZ), Jun., p. 71  
Digital Connection: Wireless Local Area Network (LAN) Design, Rotolo (N2IRZ), Dec., p. 52

## CONSTRUCTION

- (Yes, You Can) Design and Build Your Own Coax RF Choke and Balun, Smith (KA4LBE), Oct., p. 44  
Beacon in a Box: How to Build a 10-meter Auto-Beacon, Southwick (N7JS), Feb., p. 52  
Homebrew Treat II: "Look Ma, No High Voltage," Brown (NN8G), May, p. 18  
Math's Notes: A Receiver for Aircraft Transmissions, Math (WA2NDM), Aug., p. 44  
Math's Notes: Modification of the Kenwood SM-220 Panoramic Adapter Module, Math (WA2NDM), Jun., p. 50  
Rack Mount Your Station, Ellis (NP2B), Oct., p. 37  
Simple (As You Want to Make it) Junk-Box Station, A, Homoly (W0RPC), Apr., p. 20  
Weekender, The: "SWR tamers" for HF Transceivers, Salas (AD5X), Sep., p. 50  
Weekender, The: A Simple RF Detector, Salas (AD5X), Jun., p. 54  
Weekender, The: Add Variable Voltage Control to Your Fixed-Voltage Power Supply, Salas (AD5X), Jul., p. 56  
Weekender, The: An LED Nite-Lite, Salas (AD5X), Dec., p. 60  
Weekender, The: Attenuators for HF Receiver Performance Measurement, Salas (AD5X), Oct., p. 64  
Weekender, The: Boatanchor T/R Switching, Salas (AD5X), Aug., p. 66  
Weekender, The: Fast-Charge Your MFJ-259B Antenna Analyzer, Salas (AD5X), Apr., p. 64  
Weekender, The: HF Receiver Performance Measurement, Continued, Salas (AD5X), Nov., p. 80  
Weekender, The: Useful tools and Supplies, Salas (AD5X), Mar., p. 56  
Weekender, The: Workbench Accessories, Salas (AD5X), May, p. 66  
World of Ideas: A Homebrew Treat – the "Bare Essentials," Ingram (K4TWJ), Feb., p. 71

## CONTESTS & AWARDS

- Announcing: 2006 CQ WW DX Contest, Sep., p. 98  
Announcing: 2006 CQ WW RTTY DX Contest, Jul., p. 38  
Announcing: 2006 CQ WW RTTY WPX Contest, Jan., p. 38  
Announcing: 2006 CQ WW VHF Contest, Jun., p. 83  
Announcing: 2006 CQ WW WPX Contest, Jan., p. 48  
Announcing: 2007 CQ WW DX 160-Meter Contest, Nov., p. 44  
Awards: Another USA-CA Award; K8ZZ, USA-CA All Counties #1134, Melinosky (K1BV), Jun., p. 96  
Awards: Awards with an Emphasis on QRP; KA5AGM, USA-CA All Counties #1130, Melinosky (K1BV), Mar., p. 98  
Awards: DX Awards; AB7RW, USA-CA All Counties #1132, Melinosky (K1BV), May, p. 96  
Awards: DX Awards; N4XML, USA-CA All Counties #1125, Melinosky (K1BV), Feb., p. 106  
Awards: Hellschreiber Awards, W0FP, USA-CA All Counties #1135, Melinosky (K1BV), Sep., p. 82  
Awards: Single Band/Mode Endorsements for USA-CA All Counties; HB9BYZ, USA-CA All Counties #1139, Melinosky (K1BV), Dec., p. 90  
Awards: Special Event Stations Award and Awards from Slovakia, Melinosky (K1BV), Aug., p. 87  
Awards: The 10 Commandments of the Awards Custodian, plus DX Awards, Melinosky (K1BV), Apr., p. 103  
Awards: The Checkered Flag Award and Other Awards from Around the World, Melinosky (K1BV), Jul., p. 92  
Awards: USA-CA Award Q&A; N9JF, USA-CA All Counties #1136, Melinosky (K1BV), Nov., p. 98  
Awards: Utah Award Series; AA9GZ, USA-CA All Counties #1122, Melinosky (K1BV), Jan., p. 94  
Awards: Visiting All Counties, Melinosky (K1BV), Oct., p. 94  
Contesting: 2006 Contesting Resolutions; 2004 CQ WW DX and CQ WPX SSB Errata, Dorr (K1AR), Jan., p. 94  
Contesting: Contest Preparation Tips, Dorr (K1AR), Apr., p. 106  
Contesting: Critical Times in the Life of a Contest, Dorr (K1AR), Mar., p. 102  
Contesting: Has Contesting Become Too Popular? Dorr (K1AR), Jun., p. 104  
Contesting: How is Contesting Doing These Days? Dorr (K1AR), Aug., p. 94  
Contesting: Making the Top Ten, Dorr (K1AR), Sep., p. 79  
Contesting: Maximizing a Multi-Op Station, Dorr (K1AR), Jul., p. 100  
Contesting: Maximizing Your CW Contesting Skills; 2005 CQ WW DX SSB & CW Contest Errata, Dorr (K1AR), Dec., p. 97  
Contesting: Maximizing Your Phone Contesting Skills, Dorr (K1AR), Nov., p. 96  
Contesting: The Psychology of Contesting, Dorr (K1AR), Feb., p. 104  
Contesting: Using Packet Spotting, Its Cause and Effect, Dorr (K1AR), Oct., p. 102  
Contesting: When is the Contest Finished? Dorr (K1AR), May, p. 99  
CQ WW DX Contest All-Time Records, Capossela (K6SSS), Oct., p. 30  
CQ WW From Down Under: VK2GC in the 2005 CQ WW CW Contest, Wagner (K5KG), Sep., p. 24  
Results: 2005 CQ World-Wide VHF Contest, Lindholm (W1XX), Apr., p. 28  
Results: 2005 CQ National Foxhunting Weekend, Moell (K0OV), May, p. 32  
Results: 2005 CQ WW DX CW Contest, Cox (K3EST), Sep., p. 30  
Results: 2005 CQ WW DX SSB Contest, Cox (K3EST), Aug., p. 13  
Results: 2005 CQ WW RTTY DX Contest, Vinson (W6OTC) and Cortese (I2UIY), May, p. 24  
Results: 2005 CQ WW WPX CW Contest, Merchant (K6AW), Mar., p. 18  
Results: 2005 CQ WW WPX SSB Contest, Merchant (K6AW), Jan., p. 24  
Results: 2006 CQ WPX RTTY Contest, Vinson (W6OTC) and Cortese (I2UIY), Jul., p. 18  
Results: 2006 CQ WW DX 160 Meter Contests, Thompson (K4JRB), Dec., p. 13  
Tango Zulu Five Africa – The Voodoo Contest Group in Mali for the 2005 CQ WW DX CW Contest, Finkel (KY7M/TZ6LF), Nov., p. 13  
Team TI5N in the 2005 CQ WW DX SSB Contest, DuBon (N6JRL), Oct., p. 13
- ## DIGITAL/PACKET
- Awards: Hellschreiber Awards, Melinosky (K1BV), Sep., p. 82  
Contesting: Using Packet Spotting, Its Cause and Effect, Dorr (K1AR), Oct., p. 102  
Digital Connection: Buried Cables, D-Star, Regulation by Bandwidth, and more, Rotolo (N2IRZ), Apr., p. 82  
Digital Connection: Data Encryption is Legal! Rotolo (N2IRZ), Aug., p. 50  
Digital Connection: D-Star and Google, Rotolo (N2IRZ), Feb., p. 87  
Digital Connection: High-performance Software Defined Radio Project, Rotolo (N2IRZ), Oct., p. 66  
Digital Connection: On the Air with D-Star, Rotolo (N2IRZ), Jun., p. 71  
Digital Connection: Wireless Local Area Network (LAN) Design, Rotolo (N2IRZ), Dec., p. 52

## DX & OPERATING

- 160 Meters: A Great Place To Be for the Next Couple of Years, Part 1, Luetzelschwab (K9LA), Nov., p. 30  
3YØX – The Peter I Story, Fedor (KØIR), Jun., p. 13  
Andaman Again ... and More This Time, Harpole (VU4AN/VU3CHE), Jul., p. 13  
APDXC 2005: Report on the first Asia-Pacific DX Convention, Varvitsiotes (K6SV), Mar., p. 26  
Talking on the Radio, A, Shrader (W6BNB), Jan., p. 18  
CQ WW From Down Under: VK2GC in the 2005 CQWW CW Contest, Wagner (K5KG), Sep., p. 24  
DX: 3YØX, 5A7A, Glorioso, and more, Smith (N4AA), May, p. 102  
DX: CEØ and 3YØX, Smith (N4AA), Feb., p. 100  
DX: DXpeditions and a "New One," Smith (N4AA), Sep., p. 90  
DX: DXpeditions into the New Year, Smith (N4AA), Dec., p. 85  
DX: Lightning, A Serious Matter, Smith (N4AA), Aug., p. 90  
DX: Making Our Hobby Better, Smith (N4AA), Jul., p. 96  
DX: More on Operating the Pile-ups, Smith (N4AA), Jun., p. 100  
DX: Peter I Update, Smith (N4AA), Jan., p. 88  
DX: Pile-ups and Thoughts from Uncle DX, Smith (N4AA), Mar., p. 94  
DX: Solar Storm Coming, and More on the Two "New Ones," Smith (N4AA), Nov., p. 91  
DX: Suggestions for Operating the Pile-ups, Smith (N4AA), Apr., p. 99  
DX: Two New Ones, Smith (N4AA), Oct., p. 90  
How it Works: Large vs. Small Rigs - Which is Best? Ingram (K4TWJ), Mar., p. 70  
It's Radio Foxhunting Season, Moell (KØOV), Apr., p. 44  
Last Contest from D4B, The, Kotowski (SMØJHF), Mar., p. 13  
Recollections of a DXer: 50 Years in the Pile-ups and Still Counting, Richmond (W4YO), Jan., p. 13  
Tango Zulu Five Africa – The Voodoo Contest Group in Mali for the 2005 CQ WW DX CW Contest, Finkel (KY7M/TZ6LF), Nov., p. 13  
Team TI5N in the 2005 CQ WW DX SSB Contest, DuBon (N6JRL), Oct., p. 13  
VHF Plus: The Peter I DXpedition, on the Moon and in Space, Lynch (N6CL), Apr., p. 93  
World of Ideas: A Newcomer's Guide to DXing, Ingram (K4TWJ), Jan., p. 81

## HUMOR

- Math's Notes: A Technique for Recovering Very Weak Signals, Math (WA2NDM), Apr., p. 48  
Next Generation Heathkit®: Biologically-Based Self-Assembly Kits for the Radio Amateur, Heisseluft, Apr., p. 36

## KEYS & KEYERS, CW

- Morse Code the (New) Old Way: Bringing Landline Telegraph Sounders into the Computer Age, Spencer (WA8SME), Mar., p. 32  
Sounders: A New Challenge from Telegraphy's Past, Lempola (OH2BGX), Feb., p. 24  
World of Ideas: Keys 2006, Part 1, Ingram (K4TWJ), Apr., p. 56  
World of Ideas: Keys 2006, Part 2, Ingram (K4TWJ), May, p. 60

## LEGAL & REGULATORY

- Effective Lobbying in Support of Amateur Radio – Step-by-Step, Coates (N3IJ) and Krysztoforski (AJ3X), Feb., p. 44  
Major Expansion of HF Phone Bands announced by FCC, Dec., p. 2  
Technician Class Exams Feature New Question Pool as of July 1, 2006, Moseson (W2VU), Jul., p. 24  
Washington Readout: "Amateur Radio Friendly" BPL Company Gets Major Funding, Maia (W5YI), Aug., p. 46  
Washington Readout: ARRL Petitions FCC to Regulate Ham Bands by Maximum Bandwidth, Maia (W5YI), Feb., p. 68  
Washington Readout: From the Mailbag – Answers to Amateur Radio Questions, Maia (W5YI), Nov., p. 64  
Washington Readout: Ins and Outs of Vanity Callsigns; First Renewals Due Soon, Maia (W5YI), Apr., p. 50  
Washington Readout: Katrina Panel Recommends Changes to Cope with Future Disasters, Maia (W5YI), Sep., p. 20  
Washington Readout: New FCC Homeland Security Bureau, Maia (W5YI), Dec., p. 44  
Washington Readout: New Technology May Allow BPL and Amateur Radio to Co-Exist, Maia (W5YI), Jan., p. 44  
Washington Readout: Radio Jammer Jack Gerritsen, ex-KG6IRO, Found Guilty, Maia (W5YI), Mar., p. 52  
Washington Readout: The FCC Enforcement Bureau, Maia (W5YI), Jul., p. 70  
Washington Readout: UK Adopts New Approach to Ham Radio Licensing, Maia (W5YI), Oct., p. 60  
Washington Readout: UK Adopts Novel "Lifetime" Amateur Radio Licensing, Maia (W5YI), May, p. 54  
Washington Readout: Why is It Taking So Long to Finalize the Morse Code Proceeding? Maia (W5YI), Jun., p. 62  
World of Ideas: Hamming from the Shadows, Ingram (K4TWJ), Sep., p. 44  
World of Ideas: Hamming from the Shadows, Part 2, Ingram (K4TWJ), Oct., p. 48

## MISCELLANEOUS

- Announcing: 2006 inductees, CQ Amateur Radio, Contest and DX Halls of Fame, Jul., p. 26  
Announcing: 2006 Nominations Open for CQ Amateur Radio Halls of Fame, Jan., p. 31  
Belgrade & Burabu: A Look at Hamfests in Eastern Europe, Pataki (WB2AQC), Feb., p. 34  
Magic in the Sky: Behind the Scenes at Hamfests, Reinhardt (AA6JR), Oct., p. 72  
Magic in the Sky: Trash, Treasures, and a Whole Lot of Fun! Reinhardt (AA6JR), Apr., p. 86  
Merry Christmas, Dad! Another Ham Radio Family Story, Walker (WA4ILO), Aug., p. 30  
Mississippi Mud: One Ham's Experience During and After Hurricane Katrina, Brown (W1DAN) and Otnott (WD5BJT), Sep., p. 13  
World of Ideas: Specialty Clubs and Groups, Ingram (K4TWJ), Mar., p. 36

## MOBILE

- Mobiling: A Dollar Spent ... Options for Mobile Antennas, Reinhardt (AA6JR), Aug., p. 53  
Mobiling: And the Winner of the "Porcupine Escort" Caption Contest is ... , Reinhardt (AA6JR), Nov., p. 84  
Mobiling: From the Mailbag, Reinhardt (AA6JR), May, p. 81  
Mobiling: What's New for Mobile Operators, Reinhardt (AA6JR), Feb., p. 61  
World of Ideas: HF mobile and Lovin' it, part 1, Ingram (K4TWJ), Jul., p. 30  
World of Ideas: HF mobile and Lovin' it, part 2, Ingram (K4TWJ), Aug., p. 56

## NEWCOMER

- Beginner's Corner: A Critical Need for Trained Communicators and Technical Experts, Yoshida (KH6WZ), Nov., p. 54  
Beginner's Corner: Crossband Repeating – Use with Caution, Yoshida (KH6WZ), Feb., p. 64  
Beginner's Corner: Giving and Taking, Your First QSO and Opportunities to Teach Others, Yoshida (KH6WZ), Mar., p. 68  
Beginner's Corner: Learn Something New – Sources and Resources for Hams, Yoshida (KH6WZ), Jul., p. 73  
Beginner's Corner: New Radio Gear and Your Great Opportunity, Yoshida (KH6WZ), May, p. 72  
Beginner's Corner: Radio Control, Yoshida (KH6WZ), Dec., p. 34  
Beginner's Corner: Saying Goodbye on the Air, Yoshida (KH6WZ), Oct., p. 82  
Beginner's Corner: Showing Off – Ham Radio Meets the Public Eye, Yoshida (KH6WZ), Jun., p. 64  
Beginner's Corner: Swap Meets – Great Deals and Great Fun, Yoshida (KH6WZ), Aug., p. 62  
Beginner's Corner: The Baker to Las Vegas Challenge Cup Relay, a "Learn by Doing" Event, Yoshida (KH6WZ), Apr., p. 70  
Beginner's Corner: Time to Tell Your Story in CQ! Yoshida (KH6WZ), Jan., p. 86  
Beginner's Corner: Too Much Technology? Yoshida (KH6WZ), Sep., p. 64  
World of Ideas: More Helpful Notes for Newer Amateurs, Ingram (K4TWJ), Jun., p. 68

## OPINION/COMMENTARY

- DX: Suggestions for Operating the Pile-ups, Smith (N4AA), Apr., p. 99  
Op-Ed: License Exams – Let's Bring Back the Good Old Days, Hill (KH6HU), Apr., p. 63  
Op-Ed: Marrying Amateur Radio with the National Incident Management System and Incident Command System, a 7-Step Plan, Purcell (VE6FMP), Jul., p. 53  
Zero Bias: Dumbing Down or Wising Up? Moseson (W2VU), Mar., p. 8  
Zero Bias: Hamparks – A Misguided Guide for New Hams, Moseson (W2VU), Nov., p. 8  
Zero Bias: Hamparks – An Escape from Antenna Bans? Moseson (W2VU), Oct., p. 8  
Zero Bias: It's All About the People, Moseson (W2VU), Jul., p. 8  
Zero Bias: Patience, Moseson (W2VU), Dec., p. 8  
Zero Bias: QSL Cards – Here to Stay, Moseson (W2VU), Jun., p. 8  
Zero Bias: Remaking Ham Radio (Again), Moseson (W2VU), Feb., p. 8  
Zero Bias: Sunspot Cellar Blues? Moseson (W2VU), May, p. 8  
Zero Bias: The Communications Experts, Moseson (W2VU), Apr., p. 8  
Zero Bias: The University of Amateur Radio, Moseson (W2VU), Jan., p. 8  
Zero Bias: Turn on That Radio! Moseson (W2VU), Aug., p. 8  
Zero Bias: Turn on That Radio! part 2, Moseson (W2VU), Sep., p. 8

## PRODUCT REVIEWS & ANNOUNCEMENTS

- CQ Market Survey: VHF/UHF Handhelds, West (WB6NOA), Feb., p. 13  
CQ Reviews: AOR ARD-9000 Digital Voice Modem, Moseson (W2VU), Apr., p. 22  
CQ Reviews: Array Solutions Power Master, Salas (AD5X), Dec., p. 20  
CQ Reviews: GAM Electronics TG-series VHF vertical antennas, West (WB6NOA), Jun., p. 26  
CQ Reviews: Gamma Research HPS-1a Power Supply, Salas (AD5X), Oct., p. 26  
CQ Reviews: ICOM IC-7000 Transceiver, Salas (AD5X), Nov., p. 22

CQ Reviews: MAHA 8-slot Multiple Cell-Size Professional Battery Charger, West (WB6NOA), Jun., p. 44  
 CQ Reviews: MFJ-1775 6-Band Rotatable Mini-Dipole, Salas (AD5X), May, p. 28  
 CQ Reviews: Rola Adventure System Hitch-Mounted Box, West (WB6NOA), Nov., p. 36  
 CQ Reviews: Two New Diamond Antennas, Tunable Foxhunt Beam and D220 Discone, West (WB6NOA), Jan., p. 34  
 Hot Stuff at Hamvention® (and Ham-Com), Moseson (W2VU), Aug., p. 22  
 Mini-Review: MFJ Mobile Antenna Impedance Transformers, West (WB6NOA), Jul., p. 34  
 What's New: Alinco DJ-X7T Receiver, RB5000 Calibrator, SKYPOLE Support System, Thurber (W8FX), Jan., p. 64  
 What's New: ATV transmitter, Antenna/RF Switches, Lightning Protection Devices, Thurber (W8FX), Nov., p. 86  
 What's New: Audio Processor, Network Analyzer, Test Equipment, Thurber (W8FX), Feb., p. 77  
 What's New: Coax Crimper, Amplifier Radio Interface, IC-7000 Mini-Manual, Thurber (W8FX), Jul., p. 80  
 What's New: Code Practice Oscillator, Spectrum Analyzer, Vertical Antenna, Thurber (W8FX), Oct., p. 84  
 What's New: Connector System, Noise Reduction Headphone, Power Inverter, Thurber (W8FX), Sep., p. 67  
 What's New: Micro Repeater Controller, Morse Code Keyer, FT-meter, Thurber (W8FX), Jun., p. 84  
 What's New: OHR Transceiver, GAP DSP Module, MFJ Wire Antennas, Thurber (W8FX), Mar., p. 82  
 What's New: RF Accessories, Ultra-Portable Transceiver Adapter, Antenna Tuner, Thurber (W8FX), Aug., p. 73  
 What's New: Signal Generator, OCF Antenna, RF Ammeters, Thurber (W8FX), Apr., p. 88  
 What's New: Automatic Earphone Retractor, 75-amp Switching Power Supply, USB Rig-Control Interface, Thurber (W8FX), Dec., p. 66  
 What's New: Voice Keyer Upgrade, Signal Generator, Lightning Protector, Thurber (W8FX), May, p. 85  
 World of Ideas: Goodies for the Holidays, Ingram (K4TWJ), Dec., p. 62

## PROPAGATION

Propagation: Good Conditions for 2006; Short-Skip Charts for Jan./Feb., Hood (NW7US), Jan., p. 102  
 Propagation: HF Propagation in March; Short-Skip Charts for Mar./Apr., Hood (NW7US), Mar., p. 104  
 Backscatter over the Atlantic, Pocock (W3EP), Apr., p. 13  
 Propagation: A Revolutionary Forecast for Cycle 24, plus a New Version of ACE-HF Software; Short-Skip Charts for May/June, Hood (NW7US), May, p. 13  
 VHF Plus: Is Greater Worldwide 6-meter Propagation on Its Way? Lynch (N6CL), May, p. 90  
 Selective Fading, Shrader (W6BNB), Jun., p. 32  
 Propagation: Comparative Analysis with ACE-HF Software; Short-Skip Charts for Jul./Aug., Hood (NW7US), Jul., p. 102  
 VHF Plus: Tremendous 6-meter Propagation, Lynch (N6CL), Aug., p. 82  
 Propagation: Fall Promises Much Better Propagation; Short-Skip Charts for Sep./Oct, DX Charts for Sept. 15 – Oct. 15, 2006, Hood (NW7US), Sep., p. 94  
 Propagation: Is HF Signal Propagation Reciprocal? DX Charts for Oct. 15 – Dec. 15, 2006, Hood (NW7US), Oct., p. 104  
 160 Meters: A Great Place to be for the Next Couple of Years, Part 1, Luetzelschwab (K9LA), Nov., p. 30  
 Propagation: Your Personal Invitation to Join the PropNet 31 Project; Short-Skip Charts for Nov/Dec, Hood (NW7US), Nov., p. 107  
 Propagation: Check Out What's Happening in the "Basement," DX Charts for Dec. 15, 2006 – Feb. 15, 2007, Hood (NW7US), Dec., p. 100  
 Propagation: HF Propagation in April; DX Charts for Apr. 15 – Jun. 15, 2006, Hood (NW7US), Apr., p. 108  
 Propagation: Field Day 2006; DX Charts for Jun. 15 – Aug. 15, 2006, Hood (NW7US), Jun., p. 106  
 Propagation: Solar Wind and Coronal Holes; DX Charts for Aug. 15 – Sept. 15, 2006, Hood (NW7US), Aug., p. 96  
 Propagation: February Propagation; DX Charts for Feb. 15 – Apr. 15, 2006, Hood (NW7US), Feb., p. 109

## PUBLIC SERVICE

Magic in the Sky: The Last Radiogram, Reinhardt (AA6JR), Jan., p. 84  
 Op-Ed: Marrying Amateur Radio with the National Incident Management System and Incident Command System, a 7-Step Plan, Purcell (VE6FMP), Jul., p. 53  
 Public Service: A Major New Mission for MARS, Josuweit (WA3PZO), Oct., p. 52  
 Public Service: Are You Ready for Alberto? Experts predict Another Bad Hurricane Season, Josuweit (WA3PZO), Jun., p. 20  
 Public Service: Field Day – It's Only the Beginning; plus Emergency Exercise is Real as Flooding Hits Three States, Josuweit (WA3PZO), Sep., p. 35  
 Public Service: High-level Recognition for Hams, Josuweit (WA3PZO), May, p. 46  
 Public Service: It's NIMS Time, Josuweit (WA3PZO), Nov., p. 48  
 Public Service: Lockdown! Josuweit (WA3PZO), Jan., p. 52

Public Service: Miscommunication, a Fatal Mistake, Josuweit (WA3PZO), Mar., p. 60  
 Public Service: News from All Over, Josuweit (WA3PZO), Aug., p. 34  
 Public Service: Preparing for a Rainy Day, Josuweit (WA3PZO), Jul., p. 48  
 Public Service: Preparing for Next Time, Josuweit (WA3PZO), Feb., p. 82  
 Public Service: Searching for Hams, Josuweit (WA3PZO), Dec., p. 28  
 Public Service: Why Get Involved? Josuweit (WA3PZO), Apr., p. 66  
 Washington Readout: Katrina Panel Recommends Changes to Cope with Future Disasters, Maia (W5YI), Sep., p. 20

## QRP (LOW POWER)

QRP: A Low-Power Fantasy Land, Ingram (K4TWJ), Oct., p. 74  
 QRP: Everything is Coming up QRP, Ingram (K4TWJ), Aug., p. 68  
 QRP: More New Gear, Goodies and Antennas, Ingram (K4TWJ), Feb., p. 91  
 QRP: Pigs, Buddies, and 'Tennas, Ingram (K4TWJ), Jun., p. 56  
 QRP: Skeeters, 'Nauts, and more, Ingram (K4TWJ), Apr., p. 78  
 QRP: Two Tinned Tunas and more, Ingram (K4TWJ), Dec., p. 46

## SPACE & SATELLITES

Antennas: Discover Ham Satellites with a Cheap Yagi, Britain (WA5VJB), Sep., p. 55  
 VHF Plus: An Introspective Look at the Future of AMSAT, Lynch (N6CL), Dec., p. 93  
 VHF Plus: Everything's Up in the Air, High-Altitude Balloons and Space News, Lynch (N6CL), Jul., p. 86  
 VHF Plus: The CubeSats' Launch Failure, Lynch (N6CL), Nov., p. 101  
 VHF Plus: the Peter I DXpedition, on the Moon and in Space, Lynch (N6CL), Apr., p. 93

## TECHNICAL DATA

Backscatter Over the Atlantic, Pocock (W3EP), Apr., p. 13  
 Compact and Effective 40–10 Meter Portable Station, A, Salas (AD5X), Mar., p. 44  
 DX: Lightning, a Serious Matter, Smith (N4AA), Aug., p. 90  
 How it Works: Antenna Tuners, Ingram (K4TWJ), May, p. 74  
 How it Works: Choosing Earphones That are Right for You, Ingram (K4TWJ), Nov., p. 77  
 How it Works: Straight Talk on Dipoles and Doublets, Ingram (K4TWJ), Jul., p. 62  
 How it Works: Supports for Wire Antennas, Ingram (K4TWJ), Sep., p. 61  
 How it Works: Vacuum Tubes Revisited, Ingram (K4TWJ), Jan., p. 74  
 Math's Notes: A Receiver for Aircraft Transmissions, Math (WA2NDM), Aug., p. 44  
 Math's Notes: A Simple Antenna for the 2.39–2.45 GHz Amateur Band, Math (WA2NDM), Sep., p. 52  
 Math's Notes: An Active antenna, Math (WA2NDM), Nov., p. 46  
 Math's Notes: Automotive Circuitry, Math (WA2NDM), Feb., p. 56  
 Math's Notes: Introduction to the White LED, Math (WA2NDM), May, p. 44  
 Math's Notes: Modification of the Kenwood SM-220 Panoramic Adapter Module, Math (WA2NDM), Jun., p. 50  
 Math's Notes: Oscilloscope Probe Potpourri, Math (WA2NDM), Jan., p. 60  
 Math's Notes: Outdoor RF Measurements, Math (WA2NDM), Jul., p. 44  
 Math's Notes: Potpourri, Math (WA2NDM), Mar., p. 50  
 Math's Notes: Potpourri, Math (WA2NDM), Oct., p. 56  
 Selective Fading, Shrader (W6BNB), Jun., p. 32

## VHF

Antennas: Discover Ham Satellites with a Cheap Yagi, Britain (WA5VJB), Sep., p. 55  
 Math's Notes: A Simple Antenna for the 2.39–2.45 GHz Amateur Band, Math (WA2NDM), Sep., p. 52  
 VHF Plus: An Introspective Look at the Future of AMSAT, Lynch (N6CL), Dec., p. 93  
 VHF Plus: Bill McArthur, KC5ACR, Back on Earth from the ISS, Lynch (N6CL), Jun., p. 90  
 VHF Plus: Can All VHF-plus Propagation Be Predicted? Modifying the ICOM IC-7000 for TV reception, Lynch (N6CL), Feb., p. 95  
 VHF Plus: Ending 2005 and Beginning 2006 – Tremendous 6- and 2-meter Propagation between VK and ZL, Lynch (N6CL), Mar., p. 88  
 VHF Plus: Everything's Up in the Air – High-Altitude Balloons and Space News, Lynch (N6CL), Jul., p. 86  
 VHF Plus: Great Plains Super Launch 2006, Lynch (N6CL), Oct., p. 97  
 VHF Plus: How to Rejuvenate Your Club, Lynch (N6CL), Jan., p. 98  
 VHF Plus: Is Greater Worldwide 6-meter Propagation on its Way? Lynch (N6CL), May, p. 90  
 VHF Plus: The Best Bunkhouse Ham Shack in the Country; Massive July VHF Openings, Lynch (N6CL), Sep., p. 86  
 VHF Plus: The CubeSats' Launch Failure, Lynch (N6CL), Nov., p. 101  
 VHF Plus: The Peter I DXpedition, on the Moon and in Space, Lynch (N6CL), Apr., p. 93  
 VHF Plus: Tremendous 6-meter Propagation, Lynch (N6CL), Aug., p. 82

## ADVANCED SPECIALTIES INC.

Orders/Quotes 1-800-926-9HAM

[www.advancedspecialties.net](http://www.advancedspecialties.net)

### BIG ONLINE CATALOG



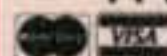
FT-1802M  
50W VHF Transceiver

**AMATEUR RADIO EQUIPMENT  
& ACCESSORIES • SCANNERS**

**ANLI • ALINCO • COMET  
• UNIDEN • YAESU**

(201)-VHF-2067

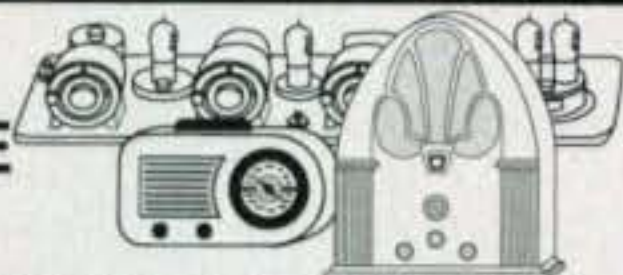
114 Essex Street, Lodi, NJ 07644



Closed Sunday & Monday



**FREE  
SAMPLE  
COPY!**



## ANTIQUE RADIO CLASSIFIED

*Antique Radio's Largest-Circulation  
Monthly Magazine*

Articles - Classifieds - Ads for Parts & Services

Also: Early TV, Ham Equip., Books,

Telegraph, 40's & 50's Radios & more...

Free 20-word ad each month. Don't miss out!



1-Year: \$39.49 (\$57.95 by 1st Class)

6-Month Trial - \$19.95. Foreign - Write.

A.R.C., P.O. Box 802-C19, Carlisle, MA 01741

Phone: (978) 371-0512; Fax: (978) 371-7129

Web: [www.antiqueradio.com](http://www.antiqueradio.com)

**CALL (800) 727-WIRE (9473)**

**That's All You Need to Know About  
Wire, Cable and Accessories!**

20 Years of Quality & Service!

Web Site: <http://www.thewireman.com>

Email: [n8ug@thewireman.com](mailto:n8ug@thewireman.com)

**TECHNICAL HELP: (864) 895-4195**

**THE WIREMAN™ INC.**

## K-Y Filter Company

3010 Grinnel Place  
Davis, CA 95616

Tel: (530) 757-6873



K-Y modem/telephone RFI filters are truly  
superior!

Please visit us at:

[www.ky-filters.com/cq.htm](http://www.ky-filters.com/cq.htm)

## Hi-Q-Antennas



You have heard  
about the  
Hi-Q- HF Mobile  
and Dipole antennas  
Check it out in **DETAILS**  
on our website:  
[www.hiqantennas.com](http://www.hiqantennas.com)

Where You work the World  
while mobile, and GET MORE  
than you have asked for!

951-674-4862

[www.hiqantennas.com](http://www.hiqantennas.com)

# ham shop

**Advertising Rates:** Non-commercial ads are 20 cents per word including abbreviations and addresses. Commercial and organization ads are \$1.00 per word. Boldface words are \$1.50 each (specify which words). Minimum charge \$2.00. No ad will be printed unless accompanied by full remittance. All ads must be typewritten double-spaced.

**Closing Date:** The 10th day in the third month preceding date of publication (example: Jan. 10th for the March issue). Because the advertisers and equipment contained in Ham Shop have not been investigated, the Publisher of *CQ* cannot vouch for the merchandise listed therein. The publisher reserves the right to reject any advertisement. Direct all correspondence and ad copy to: *CQ* Ham Shop, 25 Newbridge Road, Hicksville, NY 11801 (fax: 516-681-2926; e-mail: [hamshop@cq-amateur-radio.com](mailto:hamshop@cq-amateur-radio.com)).

**CB-TO-10M CONVERSIONS:** Frequency modifications, FM, books, plans, kits, high-performance CB accessories. Catalog \$3. CBCI, Box 30655CQ, Tucson, AZ 85751. [www.cbintl.com](http://www.cbintl.com)

**QSLing SUPPLIES.** e-mail: [plumdx@msn.com](mailto:plumdx@msn.com).

**QSLs FOR DX STATIONS:** Our new "International Division" was established to handle QSL needs of DX hams. We understand the problems of packaging, shipping, and dealing with the customs problems. You can trust us to deliver a quality QSL, usually much cheaper than you can find locally. Write, call, or FAX for free samples and ordering information. "The QSL Man—W4MPY," 682 Mount Pleasant Road, Monetta, SC 29105 USA. Phone or FAX 803-685-7117.

**"QRZ DX"**—since 1979: Available as an Adobe PDF file each Wednesday or by regular mail. Your best source for weekly DX information. Send #10 SASE for sample/rates. "The DX Magazine"—since 1989: Bimonthly—Full of DXpedition reports, QSL Information, Awards, DX news, technical articles, and more. Send \$3.00 for sample/rates. DX Publishing, Inc., P.O. Box DX, Leicester, NC 28748-0249. Phone/Fax: 828-683-0709; e-mail: [DX@dxpub.com](mailto:DX@dxpub.com); WEB PAGE: <http://www.dxpub.com>.

**CERTIFICATE** for proven contacts with all ten American districts. SASE to W6DDB, 45527 Third Street East, Lancaster, CA 93535-1802.

**TRYLON SELF-SUPPORTING TOWERS:** Delivered ANYWHERE in the US for ONLY \$261.00. This is the BEST tower value around—96 feet for only \$2451.00 DELIVERED TO YOUR QTH! Go to [www.championradio.com](http://www.championradio.com) or call 888-833-3104 for more information.

**MAUI, HAWAII: vacation with a ham.** Since 1990. [www.seaqmaui.com](http://www.seaqmaui.com), telephone 808-572-7914, or [kh6sq@seaqmaui.com](mailto:kh6sq@seaqmaui.com).

**ALUMINUM CHASSIS AND CABINET KITS, UHF-VHF Antenna Parts, Catalog.** E-mail: [k3iwk@flash.net](mailto:k3iwk@flash.net) or <http://www.flash.net/~k3iwk>.

**NAME BADGES BY GENE:** In full color, our artwork or yours. See our web page for samples and prices. [www.hampubs.com](http://www.hampubs.com) Harlan Technologies 815-398-2683.

**REAL HAMS DO CODE:** Move up to CW with **CW Mental Block Buster III**. Succeed with hypnosis and NLP. Includes two (2) CDs and Manual. Only \$29.95 plus \$5.00 s/h US. FL add \$2.14 tax. Success Easy, 160 West Camino Real #128, Boca Raton, FL 33432, 800-425-2552, [www.success-is-easy.com](http://www.success-is-easy.com).

**NEAT STUFF!** DWM Communications — <http://qth.com/dwm>

**HALLICRAFTERS SERVICE MANUALS:** Ham, SWL, Commercial. Send model number and e-mail or write for prices: **ARDCO Electronics**, P.O. Box 24 Dept. C, Palos Park, IL 60464; [wa9gob@aol.com](mailto:wa9gob@aol.com); [www.ardcoelectronics.com](http://www.ardcoelectronics.com).

**WANTED: KIM's, SYM's, AIM's, SOL's, OSI's, UNIMATs & RAD LAB BOOK.** John Rawley, 1923 Susquehanna Rd., Abington, PA 19001; e-mail: [johnr750@aol.com](mailto:johnr750@aol.com); phone 215-884-9220.

**WANTED: HAM EQUIPMENT AND RELATED ITEMS.** Donate your excess gear—new, old, in any condition—to the Radio Club of Junior High School 22, the Nation's only full time non-profit organization working to get Ham Radio into schools around the country as a teaching tool using our EDUCOM—Education Thru Communication—program. Send your radio to school. Your donated material will be picked up ANYWHERE or shipping arranged, and this means a tax deduction to the full extent of the law for you as we are an IRS 501(c)(3) charity in our 26th year of service. It is always easier to donate and usually more financially rewarding, BUT MOST IMPORTANT your gift will mean a whole new world of educational opportunity for children nationwide. Radios you can write off; kids you can't. Make 2006 the year to help a child and yourself. Write, phone, or FAX the WB2JKJ "22 Crew" today: The RC of JHS 22, P.O. Box 1052, New York, NY 10002. Twenty-four hours call 516-674-4072; fax 516-674-9600; or e-mail [crew@wb2jkj.org](mailto:crew@wb2jkj.org). Join us on the WB2JKJ Classroom Net, 7.238 MHz, 1200–1330 UTC daily and 21.395 MHz from 1400 to 2000 UTC.

**IMRA-International Mission Radio Assn.** helps missionaries—equipment loaned; weekday net, 14.280 MHz, 1:00–3:00 PM Eastern. Sr. Noreen Perelli, KE2LT, 2755 Woodhull Ave., Bronx, NY 10469.

**PHASED ARRAY NETWORKS** by COMTEK SYSTEMS deliver gain and front to back. Call 704-542-4808; fax 704-542-9652. COMTEK SYSTEMS, P.O. Box 470565, Charlotte, NC 28247.

**HF VERTICAL COMPARISON REPORT:** K7LXC and NØAX test Cushcraft, Butternut, MFJ, Force 12, Hustler, Gap, and Diamond verticals. 64-page report includes protocol, data sets, and summaries. \$17 plus \$4 s/h. [www.championradio.com](http://www.championradio.com), 888-833-3104.

**3200+ DIFFERENT AWARDS** from 128 DXCC countries. Complete data online at <http://www.dxawards.com>. One year full access just \$6. Ted Melinosky, K1BV, 12 Wells Wood Road, Columbia, CT 06237-1525.

**CASH FOR COLLINS, HALLICRAFTERS SX-88, & DRAKE TR-6.** Buy any Collins equipment. Leo, KJ6HI, phone/fax 310-670-6969, e-mail: [radioleo@earthlink.net](mailto:radioleo@earthlink.net).

**IT'S NEW AND HOT!** "Keys III" features highly detailed views and photos of keys, bugs, and paddles like few people have ever seen! It's awesome and it's available on CD (\$16 + \$2.50 post) or as a full-size book (\$18 + \$4.05 Priority Mail). Also still available, "Keys II" (\$16 + \$2.50 post) and "QRP NOW!" (\$16 + \$2.50 post). Order direct from Dave Ingram, K4TWJ, 3994 Long Leaf Drive, Gardendale, AL 35071.

**PACKET RADIO AND MORE!** Join TAPR, connect with the largest amateur radio digital group in the U.S. Creators of the TNC-2 standard, working on Software Defined Radio technology. Benefits: newsletter, software, discounts on kits and publications. For membership prices see the TAPR website: <http://www.tapr.org>.

**TOWER HARDWARE, SAFETY EQUIPMENT,** weatherproofing, T-shirts, and MORE. Champion Radio Products, telephone 888-833-3104, or [www.championradio.com](http://www.championradio.com).

# advertiser's index

now including websites

A & A Engineering	113	www.a-aengineering.com
AOR U.S.A., Inc.	43	www.aorusa.com
Advanced Specialties Inc.	112	www.advancedspecialties.net
Alan Broadband Co.	114	www.zapchecker.com
Alinco	77	www.alinco.com
Alpha Delta Communications, Inc.	45	www.alphadeltacom.com
Alpha Radio Products, LLC.	81	www.alpharadioproducts.com
Aluma Towers	114	www.alumatower.com
Ameritron	53	www.ameritron.com
Amidon Associates	65	www.amidon-inductive.com
Antique Radio Classified	112	www.antiqueradio.com
Array Solutions	33	www.arrayolutions.com
Astron Corporation	67	www.astroncorp.com
Atomic Time, Inc.	83	www.atomictime.com
bhi Ltd.	81	www.bhi-ltd.co.uk
BATTERIES AMERICA/Mr. Nicd.	115	www.batteriesamerica.com
Bencher, Inc.	107	www.bencher.com
Bilal Co./Isotron Antennas	69	www.isotronantennas.com
Burghardt Amateur Center	51	www.burghardt-amateur.com
CQ Holiday Gift Ideas	71-74	www.cq-amateur-radio.com
Cable X-PERTS, Inc.	61	www.cablexperts.com
CheapHam.com	30	www.CheapHam.com
Comet Antennas/NCG	5	www.natcommgroup.com
Command Productions	17	www.LicenseTraining.com
Communication Concepts, Inc	91	www.communication-concepts.com
ComTek Systems	79	www.comteksystems.com
Cutting Edge Enterprises	54,69,84	www.powerportstore.com
DX Engineering	113	www.dxengineering.com
DX4WIN (Rapidan Data Systems)	54	www.dx4win.com
Davis Instruments Corp.	87	www.davisnet.com
EZ Hang	113	www.ezhang.com
Elecraft	69	www.elecraft.com
Electric Radio Magazine	89	www.ermag.com
Geochron Enterprises, Inc.	47	www.geochronusa.com
Ham Radio Outlet	12,19,116	www.hamradio.com
Ham Station	87	www.hamstation.com
HamTestOnline	79	www.hamtestonline.com
Hi-Q-Antennas	112	www.hiqantennas.com
Hy-Gain	1,11	www.hy-gain.com
ICOM America, Inc	27,29,103,Cov IV	www.icomamerica.com
Idiom Press	63	www.idiompress.com
K-Y Filter	112	www.ky-filters.com/cq.htm
KJI Electronics, Inc.	89	www.kjielelectronics.com
KU4AB.com	84	www.ku4ab.com
Kanga US	86	www.bright.net/~kanga/kanga/
Kenwood U.S.A. Corporation	Cov. II	www.kenwood.net
Kent USA	30	

**SMALL BEAM...  
BIG SIGNAL**  
**HEX-BEAM®**  
Traffie Technology  
421 JONES HILL ROAD ASHBY, MA 01431-1801  
**www.hexbeam.com**  
978-386-7900 Phone 1-888-599-BEAM Toll Free USA

## Build a Better Antenna with DX Engineering!

High quality components to help you build the best amateur antenna possible!

- 5KW/10KW Baluns
- Stainless & Aluminum Clamps
- Vertical and HF Receive Antennas



Secure Online Ordering: [www.DXEngineering.com](http://www.DXEngineering.com)  
Order by Fax: 1-330-572-3279 24 hrs./7 days  
Order by Phone: 1-800-777-0703 Mon.-Fri. 8:30 am-4:30 pm EST  
Product Support Line: 1-330-572-3200 Mon.-Fri. 8:30 am-4:30 pm EST

## HANG YOUR NEXT WIRE ANTENNA THE EZ HANG WAY

OVER 4,800 SATISFIED CUSTOMERS AROUND THE WORLD



Everything you need; the EZ Hang, the EZ Winder, a spare set of bands and seven extra weights: \$99.95 + \$9.05 (US) S&H.

The only patented device on the market, with a one-year unlimited warranty.

540-286-0176

[www.ezhang.com](http://www.ezhang.com)

EZ HANG

2217 Princess Anne St., Suite 105-6, Fredericksburg, VA 22401

**1-585-591-8149**  
**Custom Ham Hats**  
**Only! \$12.99+S&H**  
Exclusive **EMBROIDER** for Amateur Radio Operators  
[www.pennystitch.com](http://www.pennystitch.com)

## 5 Amp Smart Battery Charger For Gel-Cell or Lead Acid Batteries

The Model 155 charger maintains large batteries: marine, auto & deep cycle. Features include a precision temperature tracking voltage reference and three mode charging sequence. May be left connected, will not overcharge. If a load is applied, the charger will contribute it's bulk current to the load. When the load is removed, charger current will flow into the battery. Not a switcher! **Low RF noise** linear charger. Good for **Radio Use**. See review by **W1ZR** in **MAR 04 QST**. Input 120 VAC. Output 13.8 VDC. Weighs 10 lb, 7"W x 8"D x 4 3/4"H. Custom units and various output cables available, see website for details.



**Assembled & Tested (#155-ASY) ..... \$149.95**

CA Residents add 7.75% sales tax. S/H: \$12.50 to US 48 (insured)  
AK, HI and Foreign Orders, please contact us for details

[www.a-aengineering.com](http://www.a-aengineering.com)

**A&A Engineering**

2521 W. La Palma #K • Anaheim, CA 92801  
(714) 952-2114 • FAX: (714) 952-3280

Over 20 Years Experience in Meeting Amateur & Commercial Tower Needs.

- Crank-up Towers 40' to 100'
- All Aluminum Construction
- Light-Weight-Easy to Install

**ALUMA**  
TOWER COMPANY, INC.



P.O. Box 2906-CQ  
Vero Beach, Florida 32961 USA  
e-mail: atc@alumatower.com  
http://www.alumatower.com  
Voice (772)567-3423 Fax (772)567-3432

**SIGNAL STRENGTH METER**  
3 MHz to 5 GHz

MODEL ZC 185

The ZC 185 is an extremely sensitive Radio Frequency (RF) Detector that operates over a broad span of frequencies.

**HAM RADIO:** Detects and pinpoints Fox Xmttrs., monitors power, locates cable leaks & RFI, measures antenna patterns in dB, IDs oscillations, far-field tune-ups of mW to KW rigs.

**COMPUTER WIRELESS:** Super WiFi Sniffer, detects Hot & Cold spots, measures baseline RF, optimizes hub & satellite network sites, locates hacker sites, strengthens RF signal links.

\$159.00

(+\$7 S & H)

**SECURITY:** Supersensitive covert camera & bug detector, checks transmitters, locates RFI, simplifies security wireless installations, aligns antennas, insures strong xmtz/recv links.

ALAN BROADBAND CO.  
Ph:(650) 369-9627, Fax:(650) 369-3788

WWW.ZAPCHECKER.COM

**LOG WINDOW**

Version 4.1.1.4 ©2006  
SCO, Inc.

Available online at

www.logwindow.com



**QRP J-38**

Fine quality half scale telegraph key!

Handcrafted brass and mahogany base. Fully functional - Not a toy! (2-3/8" x 1-1/2")

\$89.00 plus \$4.95 shipping

Lee Hutchins KA6IRL  
P. O. Box 228  
Oroville, CA 95965  
(530) 533-2872

www.qrpj38.com

**HYBRID-QUAD ANTENNAS**  
MINI HF BEAMS

6 models, 2 & 3 element versions

T.G.M. Communications

121 Devon St. Stratford,  
ON Canada N5A 2Z8  
Tel. & Fax (519) 271-5928  
www3.sympatico.ca/tgmc

208-852-0830 • Fax:208-852-0833

http://rossdist.com



ROSS  
DISTRIBUTING  
COMPANY

Our  
53rd Year

78 S. State Street, Preston, ID 83263

Check Website For News!

**BUX COMM:** Have you seen the New RASCAL GLX (see it at <www.packetradio.com>), PSK31, and SSTV sound card interface? Antennas, Accessories, and HAM Radio Goodies at DISCOUNT PRICES. Toll-free orderline, Monday-Friday, 8 AM to 4 PM, 1-800-726-2919. On the web visit <www.BUXcomm.com>.

**TRIBANDER COMPARISON REPORT:** Find out the real story on tribander performance. K7LXC and N0AX test more than a dozen antennas, including Force 12, Hy-Gain, Mosley, Bencher, and Cushcraft. 84-page report includes protocol, data sets, and summaries. \$17 plus \$4 s/h. <www.championradio.com> or 888-833-3104.

**FOR SALE:** CQ/Ham Radio/QST/73 magazines and binders. SASE brings data sheet. W6DDB, 45527 Third Street East, Lancaster, CA 93535-1802.

**WANTED: VACUUM TUBES** - Commercial, industrial, amateur. Radio Daze, LLC, 7620 Omnitech Place, Victor, NY 14506 USA (phone 585-742-2020; fax 800-456-6494; e-mail: <info@radiodaze.com>).

**SMART BATTERY CHARGERS Kits & Assemblies, Surplus Parts, and more.** <www.a-engineering.com>

WWW.PEIDXLODGE.COM

**NEAT STUFF!** DWM Communications — <http://qth.com/dwm>

**CALL-MASTER CALLSIGN DATABASE \$25.00 SHIPPED.** Complete US/VE/DX listings. Use with our Prolog2K Logger or stand-alone. Secure order on our website at <www.prolog2k.com> or call toll free 1-800-373-6564. DataMatrix

**VAN BUREN, ARKANSAS.** Electronic parts and components. Ham accessories, books, and magazines. Dave's Hobby Shop, 600 Main Street; phone 479-471-0750; <www.daveswebshop.com>.

MicroLog by WA0H  
Free download . . . www.wa0h.com

**OVERSEAS AIRMAIL POSTAGE** plus complete line of airmail envelopes. Order directly from our web site - James E. Mackey, proprietor. www.net1plus.com/users/ryoung/index.htm

**VERTICAL ANTENNAS AND DIRECTIONAL ARRAYS BOOK.** <www.broadcastbooks.com>

**HESTON SUPPLY:** Coax, Connectors and more. Quality Components at Low Prices. <www.hestonsupply.com>

**QSLs—Samples—**The Ebbert Printing Company D4, Post Office Box 2335, Westerville, Ohio 43086.

**AMERICAN MORSE INTERNET TELEGRAPH COMMUNICATIONS:** <http://www.webspawner.com/users/dx700>

**A NEW AMATEUR RADIO SERVICE:** Would your station benefit from a top-quality purpose-built website, controlled from your PC? QTHnet makes it viable! Bottom-line price including hosting only \$45/year (approx. £25 UK). See exactly what you get at: <www.qthnet.com>. Demo website: <www.g6avl.qthnet.com>. E-mail: <g6avl@qthnet.com (Hylton)>

**TECHNICAL BOOKS & CD:**  
<http://www.radiotechnologies.net/>

**"LOOK MA"** May '06 CQ Kits and others: <www.pastimeprojects.com>; <Pastimeprojects@yahoo.com>

W9GXR wishes everyone a Merry Christmas and a great 2007 New Year. Turned 70 years old and cherish each and every QSO even more so. God Bless those serving our country as well as those who served in the past. 73 de Nate Williams, W9GXR.

**Looking Ahead in CQ**

Here's a look at articles we're working on for upcoming issues of CQ:

- SSB Results: 2006 CQWW WPX Contest
- "160 Meters: A Great Place to be for the Next Couple of Years, Part 2," by Carl Luetzelschwab, K9LA
- "Just Put Down the Radials, OK?" by Larry Loen, WO0Z

Do you have a ham radio story to tell? See our writers' guidelines on the CQ website at <http://www.cq-amateur-radio.com/guide.html>.

**On The Cover**



Bruce Bureau, WB8NJP, of Ishpeming, Michigan, is among some 20 hams from the Hiawatha Amateur Radio Club who provide communications each winter for the U.P. 200 sled dog race in the Upper Peninsula of Michigan. The race, which last winter featured some 30 competitors and is one of the longest in the lower 48 states, covers 240 miles along the shores of Lake Superior, from Marquette to Grand Marais and back again. In our cover photo, Bruce is standing near the starting line on Marquette's main street (Washington St.) just before the 7:00 PM start of the 2006 race. Bruce says the event kicks off on a Friday evening and the winners return sometime on Sunday morning. The other racers come in throughout the day.

Hams from the Hiawatha ARC (as well as the Alger Amateur Radio Club) have provided communications for the U.P. 200 since its inception in 1990. "Without amateur radio, they cannot race," says Bruce. "There is nothing else out there that can give them the safety they need . . . The country here is very rugged and cell phones just don't do it." The hams use two repeaters to maintain communications between the start/finish line and the various checkpoints along the route. Bruce says the stations at the checkpoints remain on the air until the last team has come through, no matter how late that may be. In addition, there is a ham riding with the chief judge and another with the veterinarians who make their way along the course as the race progresses. There is also a special event station at race headquarters with an HF station on the air.

Bruce says he's been involved with the U.P. 200 since it began, noting, "I've never missed a start." (Cover photo by a very cold Larry Mulvehill, WB2ZPI)



# advertiser's index

now including websites

LDG Electronics, Inc.....	24,25	www.ldgelectronics.com
Log Window from SCO, Inc.....	114	www.logwindow.com
M <sup>2</sup> Antenna Systems, Inc. ....	55	www.m2inc.com
MFJ Enterprises, Inc. ....	37,57	www.mfjenterprises.com
ManualMan.....	91	www.manualman.com
Microsec R&D Inc.....	89	http://rattailantenna.com
Morse Express .....	48	www.MorseX.com
Nemal Electronics International, Inc.....	36	www.nemal.com
New Communications Solutions.....	17	www.ncsradio.com
Nifty! Ham Accessories .....	86	www.niftyaccessories.com
Penny's Stitch n' Print .....	113	www.pennystitch.com
PerformanceHF.com .....	56	www.PerformanceHF.com
PowerPort.....	54,69,84	www.powerportstore.com
QCWA .....	89	www.qcwa.org
QRPJ38.com .....	114	www.qrpj38.com
QSLs by W4MPY .....	86	www.qlsman.com
R.F. Connection .....	86	www.therfc.com
RF Parts Company .....	39	www.rfparts.com
RT Systems.....	92	www.cloningsoftware.com
Radio Club of J.H.S. 22.....	80	www.wb2jkj.org
Radio Daze.....	86	www.radiodaze.com
Radio Works.....	35	www.radioworks.com
Rapidan Data Systems (DX4WIN) .....	54	www.dx4win.com
RigExpert.....	87	www.rigexpert.com
Ross Distributing Company.....	114	http://rossdist.com
Surplus Sales of Nebraska.....	84	www.surplussales.com
T.G.M. Communications.....	114	www3.sympatico.ca/tgmc/
Tarheel Antennas .....	55	www.tarheelantennas.com
TEN-TEC, Inc. ....	15	www.tentec.com
Texas Towers.....	58,59	www.texastowers.com
Timewave Technology Inc.....	95	www.timewave.com
TOKYO HY-POWER LABS, INC.-USA .....	49	www.thp.co.jp
Traffie Technology.....	113	www.hexbeam.com
Universal Radio, Inc. ....	83	www.universal-radio.com
VIS Amateur Supply .....	84	www.visradio.com
Vibroplex .....	81	www.vibroplex.com
W2IHY Technologies.....	107	www.w2ihy.com
W4RT Electronics.....	35	www.w4rt.com
W5YI Group.....	21	www.w5yi.org
West Mountain Radio .....	3	www.westmountainradio.com
Wireman, The.....	112	www.thewireman.com
Yaesu.....	6,7,Cov III	www.vxstdusa.com

It's easy to advertise in CQ.  
Let me know what I can do to help.

Don Allen, W9CW

(217) 344-4570 or FAX (217) 344-4575 e-mail:ads@cq-amateur-radio.com

Please direct subscription questions to 516-681-2922

**BATTERIES AMERICA** Ph:800-308-4805

**December '06 Specials** (Order ONLINE too)

**www.batteriesamerica.com**

For Yaesu-Vertex FT-60R/E, VX-110, 120, 150, 170, 177, 180, 210 etc.

**FNB-83x** Ni-MH batt. 7.2v 2000mAh **\$39.95**

For Vertex Standard VX-2R/E : (Li-ION - designed for the VX-2R)

**FNB-82Li** Li-ION battery 3.7v 1070mAh **\$28.95**

For Yaesu-Vertex VX-5R/s, VX-6R, VX-7R/b, VX-7Rb, VXA-700:

**FNB-80Li** Li-ION batt. 7.4v 1400mAh **\$42.95**

For YAESU - Vertex FT-817 (Backpacker Radio) :

**FNB-72xh** Ni-MH battery 9.6v 2500mAh **\$49.95**

For YAESU FT-50/R/D, 40R, 10R; VXA-100 etc. (w/ clip)

**FNB-41xs** 5W Ni-MH batt. 9.6v 1450mAh **\$54.95**

For YAESU FT-11R, FT-41R, FT-51R :

**FNB-38xh** 5W NiMH batt. 9.6v 1450mAh **\$49.95**

For YAESU FT-530, FT-76, FT-26; FT-416, 415, 816, etc.:

**FNB-25x** Ni-MH battery 7.2v 1100mAh **\$28.95**

**FNB-27xs** Ni-MH batt. 12.0v 1450mAh **\$49.95**

**FBA-12** 6-cell AA Battery Case **\$22.95**

**FBA-12h** 10-cell AA Battery Case (5W) **\$28.95**

For YAESU FT-411, FT-470, FT-73R, FT-33R, FT-23R etc.

**FNB-10h** Ni-Cd battery 7.2v 1100mAh **\$25.95**

**FBA-17** 6-cell AA Battery Case **\$22.95**

For ICOM IC-V8, V82, U82, F3,4GS/GT, F30,40GS/GT etc.:

**BP-210N** 5W+ NiMH batt. 7.2v 2000mAh **\$39.95**

**CBE-210N** Battery Eliminator (12V Mobile use) **\$24.95**

For ICOM IC-P7, IC-P7A (New compact dual band HT):

**BP-243** 1.5W Li-ION batt. 3.7v 1800mAh **\$28.95**

NEW for ICOM IC- T90, T90A; IC-91A, 91AD (D-STAR), etc.:

**BP-217** 5W Li-ION battery 7.4v 1400mAh **\$39.95**

**EMS-217** Desktop Rapid Charger for BP-217 **\$49.95**

For ICOM IC-T8A, IC- T8A-HP, IC-T81A, IC-A23, IC-A5 :

**BP-200XL** 5w Ni-MH batt. 9.6v 1450mAh **\$59.95**

**BP-197h** 6-cell AA Battery case **\$29.95**

**CP-12L** Filtered 12VDC Power / Charge Cord **\$16.95**

For ICOM IC-W32A, T7A, T7H, Z1A, T22A, T42A, W31A :

**BP-173x** 5W Ni-MH battery 9.6v 1450mAh **\$55.95**

**BP-170L** 6-cell AA Battery case **\$25.95**

For ICOM IC-W21A, V21AT, 2GXAT (157x = Black; 131h = Grey)

**BP-157x / BP-131h** 7.2v 1800mAh **\$28.95**

For ICOM IC-2AT, 02AT, 2GAT, etc & Radio Shack HTX-202 / 404 :

**BP-8h** 3W Ni-Cd - for ICOM 8.4v 1400mAh **\$32.95**

**BP-202h** NiMH - Radio Sh. 7.2v 1800mAh **\$29.95**

**IC-8** 8-cell AA battery case (w/ Charge Jack) **\$22.95**

**EMS-20i** Quick-Smart Charger for BP-2,3,5,7,8 etc. **\$54.95**

For KENWOOD TH-F6A, TH-F7 Tri-Band HTs:

**PB-42L** Li-ION battery 7.4v 1800mAh **\$39.95**

**PB-42XL** Li-ION battery 7.4v 3600mAh **\$59.95**

**EMS-42K** Desktop Rapid Charger for PB-42L/XL **\$49.95**

For KENWOOD TH-G71/K, TH-D7A/G (PB-39 comes w/ Belt Clip)

**PB-39h** 5W Ni-MH batt. 9.6v 1450mAh **\$54.95**

**BT-11h** 6-cell AA Battery Case **\$24.95**

For KENWOOD TH-79A/AKSS, TH- 42A, TH-22A etc.:

**PB-34xh** 5W Ni-MH battery 9.6v 1200mAh **\$39.95**

For KENWOOD TH-78/A, 48/A, 28/A, 27/A etc.:

**BT-8** 6-cell AA Battery Case **\$14.95**

**PB-13x** Short Ni-MH batt. 7.2v 1500mAh **\$34.95**

For KENWOOD TH-77A, 75, 55, 46, 45, 26, 25 etc.:

**PB-6x** Long Life Ni-MH battery 7.2v 1600mAh **\$34.95**

For KENWOOD TH-205/A, 215/A, 225, 315 etc.:

**PB-2h** Long Life Ni-MH batt. 8.4v 1600mAh **\$39.95**

For KENWOOD TR-2500, 2600 : (Wall charger: \$ 12.95 ea)

**PB-25** Long Life Ni-MH battery 8.4v 1600mAh **\$39.95**

For ALINCO DJ-V5, DJ-V5TH : ( includes belt clip ) NEW !

**EBP-46h** 5W Ni-MH batt. 9.6v 1450mAh **\$49.95**

For ALINCO DJ-195/HP/R, 196, 446, 493, 496, 596 etc.:

**EBP-48h** 5W Ni-MH batt. 9.6v 2000mAh **\$39.95**

For ALINCO DJ-G5TD/TH/TY, 190T, 191T, TD, TH:

**EBP-36xh** 5w NiMH batt. 9.6v 1450mAh **\$52.95**

For ALINCO DJ-580, 580T, 582, 180, 280T, 480 etc.:

**EDH-11** 6-cell AA Battery Case **\$22.95**

**EDH-11h** 9-cell AA Battery Case (5W TX) **\$28.95**

**EBP-20N** Ni-Cd battery 7.2v 1100mAh **\$24.95**

For ADI AT-600 & REALISTIC HTX-204 (for 5-Watt TX):

**ADI-600x** 5W NiMH batt. 12.0v 1200mAh **\$39.95**

For STANDARD C228, C528, C558; ADI HT-201, 401 etc.:

**CNB-151x** Ni-MH battery 7.2v 1800mAh **\$29.95**

**CBP-888** 8-cell AA Battery Case (5W TX) **\$28.95**

**NEW - the V-1000 Digital Charger**  
for AA & AAA batteries! **\$17.95 ea.**

(1) Fast-Smart Charger for 2-4 AA or AAA Ni-MH or Ni-Cd cells, w/Auto Shut-off!

(2) Comes with AC power supply AND 12VDC power cord for home & mobile operation!

(3) Provides safe, quick 2-3 hour charge!

(4) Easy-to-read LED charge status indicators.

**SANYO AA Ni-MH 2700mAh cells - SALE \$3.50 ea.**

Mail, E-mail, Phone, or Fax order! Use MC, VISA, DISC, or AMEX

Call, write, e-mail, or Fax us for our **FREE CATALOG!**

BATTERIES AMERICA- 8845 S. Greenview #2, Middleton, WI 53562

**Order Toll Free: 1-800-308-4805**

Fax: 608-831-1082 E-mail: ehyost@chorus.net

**Special Holiday Discounts Off Our Already Low Prices!**



# HAM RADIO OUTLET

WORLDWIDE DISTRIBUTION

**ANAHEIM, CA**  
(Near Disneyland)  
933 N. Euclid St., 92801  
(714) 533-7373  
**(800) 854-6046**  
Janet, KL7MF, Mgr.  
anaheim@hamradio.com

**BURBANK, CA**  
1525 W. Magnolia Blvd, 91506  
(818) 842-1786  
**(800) 854-6046**  
Eric, KA6IHT, Mgr.  
Magnolia between  
S. Victory & Buena Vista  
burbank@hamradio.com

**OAKLAND, CA**  
2210 Livingston St., 94606  
(510) 534-5757  
**(800) 854-6046**  
Mark, W17YN, Mgr.  
I-880 at 23rd Ave. ramp  
oakland@hamradio.com

**SAN DIEGO, CA**  
5375 Kearny Villa Rd., 92123  
(858) 560-4900  
**(800) 854-6046**  
Tom, KM6K, Mgr.  
Hwy. 163 & Claremont Mesa  
sandiego@hamradio.com

**SUNNYVALE, CA**  
510 Lawrence Exp. #102, 94085  
(408) 736-9496  
**(800) 854-6046**  
Dan K6DN, Co-Mgr.  
Howard, W6HOC, Co-Mgr.  
So. from Hwy. 101  
sunnyvale@hamradio.com

**NEW CASTLE, DE**  
(Near Philadelphia)  
1509 N. Dupont Hwy., 19720  
(302) 322-7092  
**(800) 644-4476**  
Rick, K3TL, Mgr.  
RT.13 1/4 mi., So. I-295  
newcastle@hamradio.com

**PORTLAND, OR**  
11705 S.W. Pacific Hwy.  
97223  
(503) 598-0555  
**(800) 854-6046**  
Leon, W7AD, Mgr.  
Tigard-99W exit  
from Hwy. 5 & 217  
portland@hamradio.com

**DENVER, CO**  
8400 E. Iliff Ave. #9, 80231  
(303) 745-7373  
**(800) 444-9476**  
John, N5EHP, Mgr.  
denver@hamradio.com

**PHOENIX, AZ**  
1939 W. Dunlap Ave., 85021  
(602) 242-3515  
**(800) 444-9476**  
Gary, N7GJ, Mgr.  
1 mi. east of I-17  
phoenix@hamradio.com

**ATLANTA, GA**  
6071 Buford Hwy., 30340  
(770) 263-0700  
**(800) 444-7927**  
Mark, KJ4VO, Mgr.  
Doraville, 1 mi. no. of I-285  
atlanta@hamradio.com

**WOODBRIIDGE, VA**  
(Near Washington D.C.)  
14803 Build America Dr. 22191  
(703) 643-1063  
**(800) 444-4799**  
Steve, W4SHG, Mgr.  
Exit 161, I-95, So. to US 1  
woodbridge@hamradio.com

**SALEM, NH**  
(Near Boston)  
224 N. Broadway, 03079  
(603) 898-3750  
**(800) 444-0047**  
Chuck, N1UC, Mgr.  
sales@hamradio.com  
Exit 1, I-93;  
28 mi. No. of Boston  
saalem@hamradio.com

**GREAT YAESU  
WINTER SPECIALS  
Through 12/31/06**



**\$10. HRO Coupon** **\$70. OFF** expires 12/31/06

**FT-897D** VHF/UHF/HF Transceiver

- HF/6M/2M/70CM • DSP Built-in
- HF 100W (20W battery)
- Optional P.S. + Tuner • TCXO Built-in

**Call Now For Our Low Pricing!**

**\$10. HRO Coupon** **\$50. OFF** expires 12/31/06

**FT-817ND** HF/VHF/UHF TCVR

- 5W @13.8V ext DC • USB, LSB, CW, AM, FM
- Packet (1200/9600 Baud FM) • 200 mems
- built in CTCSS/DCS • TX 160-10M, 6M, 2M, 440
- Compact 5.3" x 1.5" x 6.5", 2.6 lbs
- FNB-85 NiMH battery + NC-72B included

**Call Now For Low Pricing!**

**\$10. HRO Coupon** **FREE YSK-8900** thru 12/31

**FT-8800R** 2M/440 Mobile

- V+U/V+V/U+U operation
- V+U full duplex • Cross Band repeater function
- 50W 2M 35W UHF
- 1000+ Memory channels
- WIRES ready

**Call Now For Low Pricing!**

**\$5. HRO Coupon**

**VX-6R** 2M/220/440HT

- wideband RX - 900 memories
- 5W 2/440, 1.5W 220 MHz TX
- Li-ION Battery - EAI system
- Fully submersible to 3 ft.
- CW trainer built-in

**NEW Low Price!**

AT, CA, CO, GA, VA residents add sales tax. Prices, specifications, descriptions, subject to change without notice.

**\$25. OFF** expires 12/31/06

**VX-2R** 2M/440 HT

- World's smallest Dual-band HT w/ wide RX
- 1.5 W RF output
- WiRES compatible
- 1300 Memory channels

**Call For Low Price!**

**\$10. OFF** expires 12/31/06

**FT-60R** 2m/440 HT

- 2m/440 HT
- 5W Wide-band receive
- CTCSS/DCS Built-in
- Emergency Auto ID

**Low Price!**

**\$5. HRO Coupon** **\$30. OFF** expires 12/31/06

**VX-7R/VX-7R Black** 50/2M/220/440 HT

- Wideband RX - 900 Memories
- 5W TX (300mw 220Mhz)
- Li-Ion Battery
- Fully Submersible to 3 ft.
- Built-in CTCSS/DCS
- Internet WIRES compatible

**Now available in Black!**

**\$5. HRO Coupon** **NEW!**

**VX-150** 2M Handheld

- Direct Keypad Entry
- 5w output
- 209 memories
- Ultra Rugged

**Call Now For Special Pricing!**

**\$5. HRO Coupon**

**FT-8900R** Quadband Transceiver

- 10M/6M/2M/70CM • Wires capable
- 800+ memories • Built-in CTCSS/DCS
- Removable w/optional YSK-8900

**Call Now For Special Pricing**

**\$10. HRO Coupon** **FREE YSK-857** thru 12/31

**FT-857D** Ultra compact HF, VHF, UHF

- 100w HF/6M, 50w 2M, 20w UHF
- DSP included • 32 color display
- 200 mems • Detachable front panel (YSK-857 required)

**Call for Low Price!**

**\$10. HRO Coupon** **FREE YSK-7800** thru 12/31

**FT-7800R** 2M/440 Mobile

- 50w 2m, 40w on 440mhz
- Weather Alert
- 1000+ Mems
- WIRES Capability
- Wideband Receiver (Cell Blocked)

**Call Now For Your Low Price!**

**\$25. HRO Coupon**

**FT-2000** HF + 6M tcvr

- 100 W w/ auto tuner • built-in Power supply
- DSP filters / Voice memory recorder
- 3 Band Parametric Mic EQ • 3 IF roofing filters

**Call Now For Low Pricing!**

**\$10. HRO Coupon** **FREE YSK-8900** thru 12/31

**FT-8900R** Quadband Transceiver

- 10M/6M/2M/70CM • Wires capable
- 800+ memories • Built-in CTCSS/DCS
- Removable w/optional YSK-8900

**Call Now For Special Pricing**

Look for the HRO Home Page on the World Wide Web <http://www.hamradio.com>

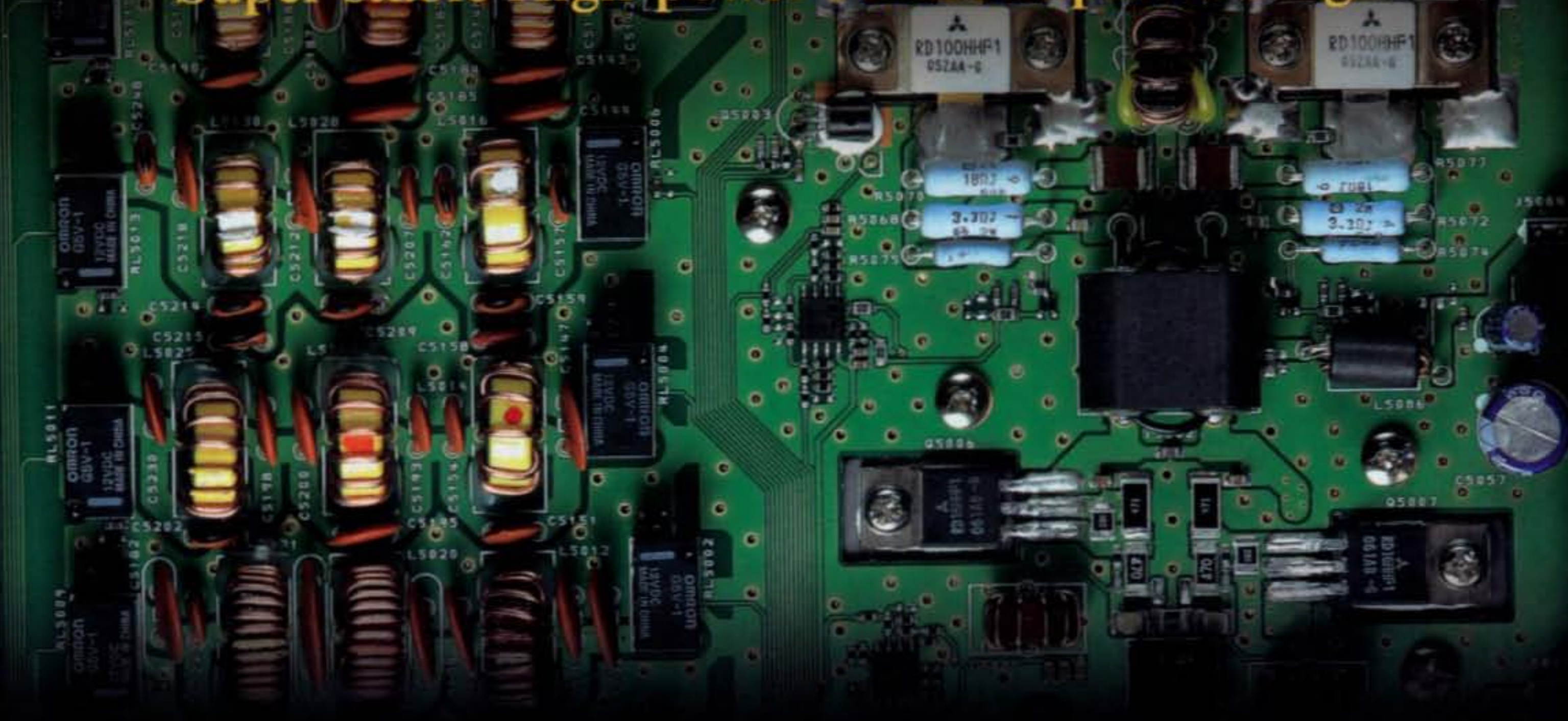
**COAST TO COAST FREE SHIPPING**  
UPS - Most Items Over \$100  
Rapid Deliveries From The Store Nearest To You!



**The radio... YAESU**  
Choice of the World's top DX'ers

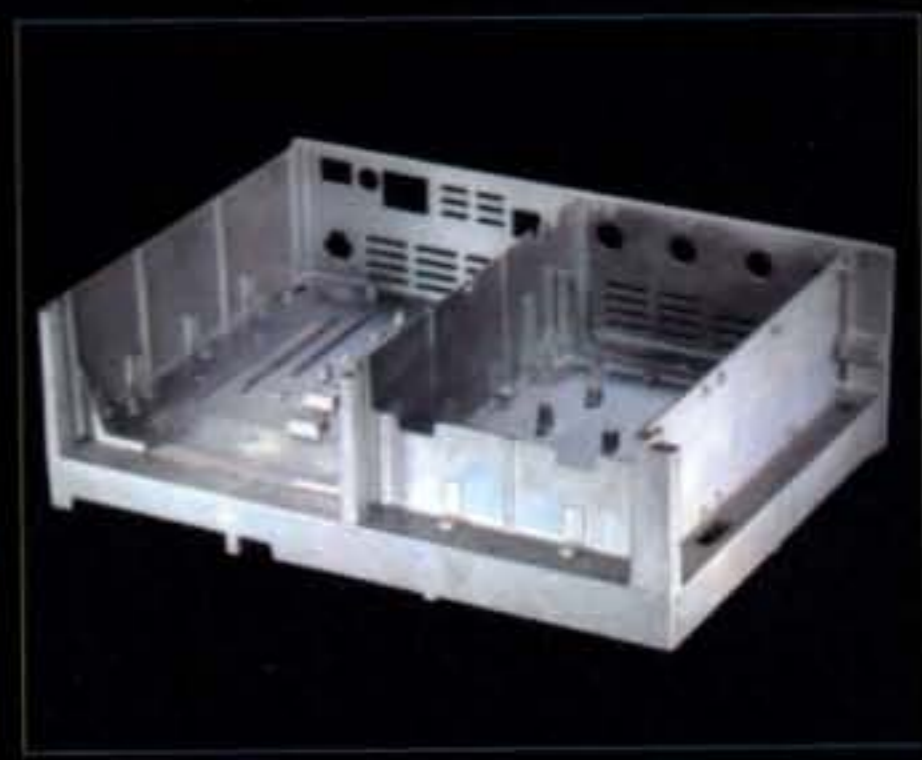
# Ultra-Clean Transmitter Design

## Super-stable High-power Final Amplifier Stage



The FT-2000 (100-Watt version) incorporates a pair of reliable RD100HHF1 MOS FETs in a push-pull configuration with a 13.8 Volt power supply. The MOS FETs are cooled using a huge 1400 ccm die-cast aluminum heat sink with a high coefficient of thermal conductivity. A thermostatically controlled 3.6" axial cooling fan engages at 104° F. and adjusts thru five speeds, depending on the degree of cooling required. The large bearing surface of the fan, its "floating" mount, and the unique heat sink design make the cooling system ultra quiet and very efficient.

The FT-2000D (200-Watt version) uses push-pull SD2931 MOS FETs operating at 50 Volts. The user adjustable bias will ensure optimum suppression of intermodulation distortion products. The elaborate heat sink combines aluminum and a 0.12" thick high-conductivity copper plate for a total capacity of 2720 ccm, ensuring many years of reliable operation of this 200-Watt powerhouse.



HF/50 MHz Transceiver  
**FT-2000D** 200 W Version (External Power Supply)  
**FT-2000** 100 W Version (Internal Power Supply)

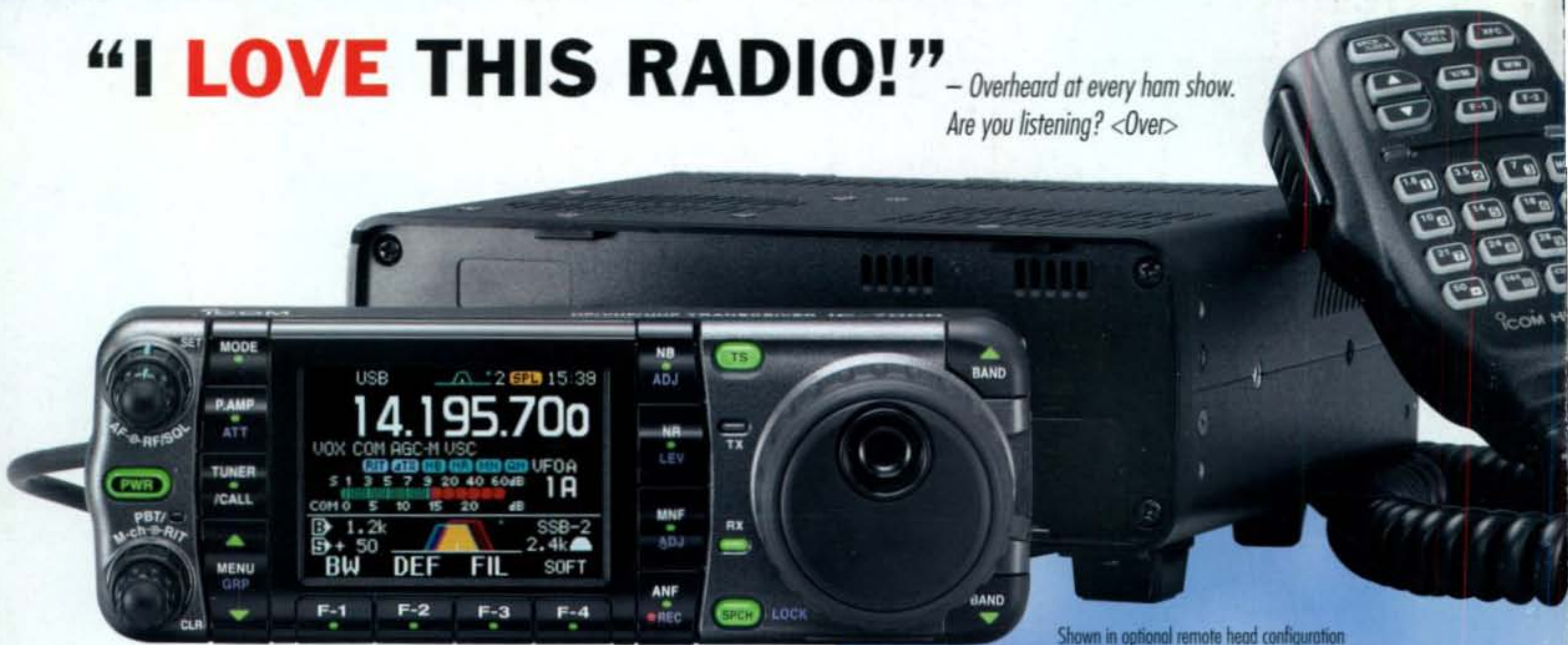
**YAESU**  
Choice of the World's top DX'ers™

Vertex Standard  
US Headquarters  
10900 Walker Street  
Cypress, CA 90630 (714)827-7600

For the latest Yaesu news, visit us on the Internet:  
<http://www.vertexstandard.com>

Specifications subject to change without notice. Some accessories and/or options may be standard in some areas. Frequency coverage may differ in some countries. Check with your local Yaesu dealer for specific details.

**"I LOVE THIS RADIO!"** – Overheard at every ham show.  
Are you listening? <Over>



Shown in optional remote head configuration

**IC-7000**  
Icom's newest compact multi-band rig. It's the one you'll keep. **For the love of ham radio.**

"If your focus is HF home station operation and you have the table space, check out the '746 or '756 series radios. For top-tier HF contest operation, particularly with big antennas, the '756 or '7800 offer better radio performance at a higher price. If you just operate VHF/UHF or satellites, there are better choices. But if, like a lot of hams, you like to do a bit of all of the above, and particularly if you sometimes take your radio with you, the IC-7000 is worth a very close look."

– QST, May 2006

*About the display:*

"Everyone who used the review radio raved about the '7000's color TFT display screen. The incredible resolution, bright colors and excellent contrast make the display easy to read under a variety of lighting conditions and viewing angles. The characters are crisp and clear, and everyone who used the radio could easily see and use the screen labels and graphics." – QST, May 2006

**Instant \$90 Savings With Purchase\***



**AH-4**

- Long wire auto antenna tuner
- HF / 50MHz
- Water resistant
- Easy connection



**Free With Purchase!\***

**RMK-7000**

- Remote mounting kit
- Includes cable and brackets
- Mount the head where you want it!
- OPC-1443 = 11 ft



**OPC-1443/1444**

- Remote head separation cable
- Simple plug and play
- Mount the head where you want it!
- OPC-1443 = 11 ft; OPC-1444 = 16 ft

**Instant \$100 Savings With Purchase\***



**AT-180**

- Long wire auto antenna tuner
- HF / 50MHz
- Compact footprint
- Size and style matches the 7000



**AH-2B**

- Bumper mount antenna element
- HF / 50MHz
- Stainless steel spring
- 8.2 ft tall

- HF / 6M / 2M
- 2 - 100 watts output power (2 - 50 AM)
- General coverage RX: 0.3 - 60 MHz
- DSP<sup>2</sup>: Dual DSP processors
- Digital IF filters
- Twin Band Pass Tuning

- Multiple AGC loops
- MNF<sup>2</sup>: Dual manual notch filters
- Digital voice recorder
- 2.5 inch color TFT display
- 2 mode band scope
- Remote control microphone

Visit your Icom dealer today!

Free literature: 425-450-6088

www.icomamerica.com



\*Limited time offer. See dealer for details.  
©2006 Icom America Inc. The Icom logo is a registered trademark of Icom Inc. All specifications subject to change without notice or obligation. 8937